



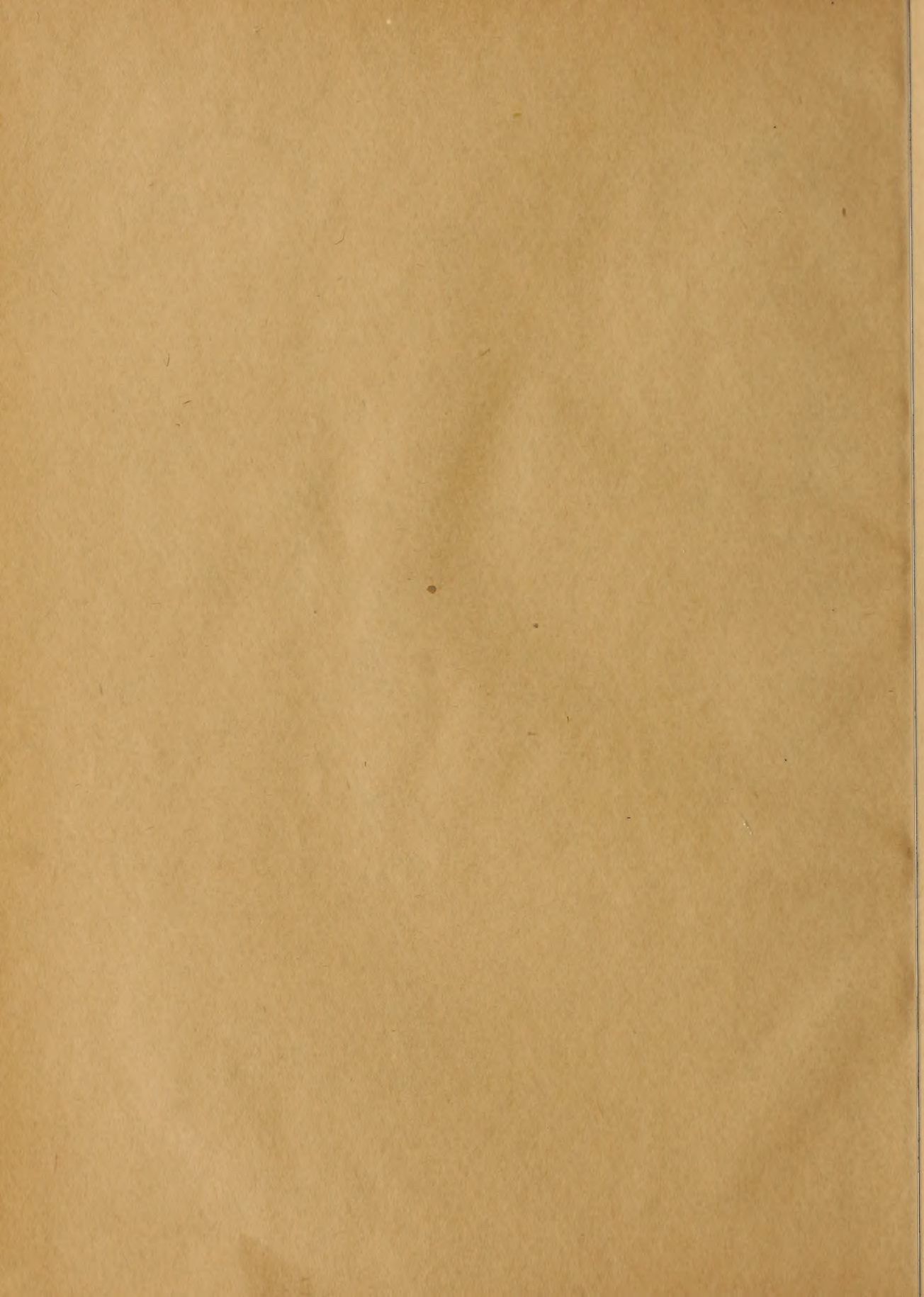
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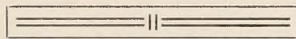
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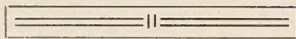
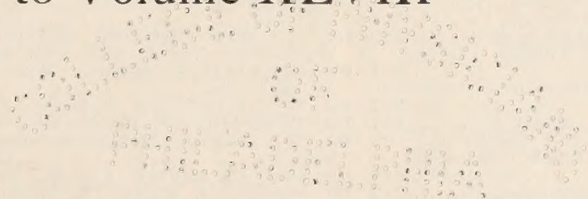
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ON THE CARE OF PATIENTS MANIFESTING HIGH BLOOD PRESSURE.*

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The high blood pressure patient we have always with us. Not a working day passes in which the general practitioner or the consulting internist fails to be confronted with the problem of the management of one or another patient in some stage of chronic arterial hypertension. Surgeons contemplating operative interference and medical and surgical specialists active in more localized domains dare not neglect consideration of the significance of high blood pressure in their patients and must learn how to value it. The management of patients manifesting high blood pressure is then a topic that interests every one of us. We remain, it is true, in dense ignorance, as yet, concerning many points in connection with the causation and course of high blood pressure about which we would fain have knowledge. Experienced physicians have, however, gradually accumulated data that can be utilized greatly to the benefit of hypertensive patients. To the application of some of the data to therapy my remarks at this time will refer.

CLASSIFICATION OF THERAPY.

As medicine has gradually passed from the stages of tradition and empiricism to that of modern science, therapeutic effort has become ever more rationally based. Thorough diagnostic study now precedes therapeutic intervention. When a patient applies to us for relief, we endeavor by precise methods (analytical and synthetical) to make a survey of him as a whole in order that we may recognize all discoverable deviations from normal structure and function. We try, also, to ascertain the

sequence of events in any pathological processes that we find to exist. In other words, we determine what functions are abnormal and we learn all that we can regarding the underlying processes. We inquire into their possible internal and external causes (etiology), and we consider the effects of the causes and the serial order in which the effects have appeared (pathogenesis). It is our aim to acquire as full a knowledge as is practicable of the physical, psychic and social status of our patient, of the conditions that underlie this status and of their development and causes before we permit ourselves to decide upon the measures best suited to check the progress of disorders, to restore normal functions, or to bring functions nearer to the normal.

When planning therapeutic regimes it is desirable in each instance to have clearly in mind precisely what we are attempting to do. It is, accordingly, helpful to consider therapy under two headings: (1) available remedial measures and (2) effects to be produced by the measures.

When we think of treatment under the first heading, that of the kinds of measures that can be instituted, we select from our lists of remedies (diet, baths, air, light, exercise, rest, recreation, massage, electricity, drugs, vaccines, sera, nursing, dentistry, surgery, etc.) those that we regard as applicable to the case in hand. But before making such selection, we do well to consider the treatment of the patient under the second of the headings mentioned, namely, the effects to be produced, or what we really desire to do. We can, I think, divide what we wish to accomplish into four parts:—

1. Removal of causes or rendering them harmless (*etiological therapy*).

2. Restoration of the disturbed functions to normal by direct measures (*functional therapy*).

*Read by invitation at the twenty-third annual session of the Tri-State Medical Association of the Carolinas and Virginia held at Spartanburg, South Carolina, February 16, 1921.

3. Support of the reaction of the organism against the disease process or its cause (*regulatory therapy*).

4. Relief of single symptoms that harm the patient or disturb him (*symptomatic therapy*).

ETIOLOGICAL THERAPY OF HYPERTENSIVE STATES.

Causal therapy is the ideal of every rational therapist. Success in treatment is notably greater in those diseases for which we know causes that are removable or that can be rendered harmless. Concerning the real cause, or causes, of chronic arterial hypertension, however, we are, unfortunately, still profoundly ignorant. We are familiar with certain groups of patients in whom high blood pressure occurs and know the symptoms and signs that they present; we are acquainted, too, with the general course of the malady in these different groups and have learned the common terminations of the disease-process. But our ignorance of the etiology and the pathogenesis of chronic arterial hypertension is far more impressive than our knowledge. This want of knowledge seriously handicaps us in our efforts to plan a causal therapy.

Clinicians have, nevertheless, made shrewd observations of patients that have yielded clues to the kinds of constitutional make-up and the varieties of environmental influences that tend to favor the development of chronic arterial hypertension. That hereditary and constitutional factors are of importance in the causation of hypertensive states would seem clear from the fact that high blood pressure is often met with in several members of the same family, all of whom exhibit certain more or less characteristic physical and mental traits. Thus on the physical side such persons often exhibit the so-called apoplectic habitude (stocky build, short neck, plethora, obesity) and on the mental side the marks may be almost as distinctive (worrying tendency, irritability, over-seriousness, inability to play, circumscription of interests, ill-balanced life). Families in which megrim is common and families in which goitre is prevalent seem also particularly prone to the development of hypertensive states. Just what is responsible for the defects in the germ plasma that account for these constitutional inferiorities (vasopathic, neuropathic, endocrinopathic) we do

not yet know, but it seems certain that in some families, the members are, wholly aside from environmental conditions, especially predisposed to the hypertensive maladies. One member after another develops high blood pressure and ultimately makes a characteristic exit (apoplexy, angina pectoris, heart failure, pulmonary oedema, uraemia, terminal infection). The members of families thus predisposed seem to start with "bad tubing," with vulnerable vasomotor systems, or with ill-balanced endocrine organs. Sooner or later, even under favorable environmental influences, the evidences of chronic arterial hypertension appear in such persons.

Careful analyses of the histories of hypertensive patients indicate, all the same, that certain environmental influences must be counted also as causes of the maladies of which chronic arterial hypertension is a symptom. For, exposed to these influences, normal persons may develop high blood pressure and persons with family predisposition will manifest high blood pressure earlier in life than they otherwise would. Arteriosclerosis and chronic renal disease are so often met with in association with chronic arterial hypertension that many believe that they must have etiological factors in common with it. Among the influences in the environment now thought to contribute to the origin of such states I may mention: (1) infectious processes (recurring tonsillitis, oral sepsis, sinusitis, influenza, scarlet fever, diphtheria, typhoid fever, etc.); (2) chronic intoxications of exogenous or endogenous origin (lead poisoning, chronic alcoholism, tabagism, excessive use of condiments, overeating, chronic constipation); (3) external influences that favor metabolic disturbances such as diabetes, gout and obesity, and (4) faults in general hygiene that increase the wear and tear of life on either the mental or the physical side (excitement, worry, anxiety, overwork, indolence, injudicious clothing, exposure, sexual excesses).

The several possible etiological factors just mentioned should be considered when we are asked to try to prevent chronic arterial hypertension in the predisposed or to arrest the progress of the process that underlies it after it has appeared. The constitutional make-up of persons already born can not, of course, be altered. It is questionable, too, whether or not our

knowledge of heredity is as yet sufficient to justify any rigid eugenic campaign directed especially toward the prevention of hypertension. When, in the future, genetic factors come to be better understood, hypertension of cacogenic origin may, perhaps, be avoidable. At present our preventive and arrestive efforts are, of necessity, restricted almost entirely to (1) the prevention of the acute infectious diseases, (2) the removal of chronic foci of infection, (3) the prevention of intoxications, and (4) education to hygienic living.

In the early stages of chronic arterial hypertension, a thorough general diagnostic survey of the patient will often reveal foci of infection, recurring intoxications, or glaring defects in personal hygiene that warrant active therapeutic intervention. Focal infection, if discovered in association with incipient hypertension, should be dealt with in the same way as in chronic infectious arthritis or in chronic anaemia. Pyorrhoea alveolaris, periapical granulomata, infected tonsils and adenoids, infected paranasal sinuses, chronic appendicitis, chronic cholecystitis, chronic prostatitis (in men) and chronic pelvic inflammatory disease (in women) should be looked for and, if found, receive appropriate surgical treatment. Discretion should be used, however, in dealing surgically with such focal infections in the advanced stages of hypertensive maladies for there would be, as a rule, but little, if anything, gained by radical surgical treatment after extensive retinal hemorrhages or cerebral apoplexies have occurred, when outspoken cardiac failure has appeared or severe renal decompensation has become manifest. That poisonings by lead, by alcohol, by tobacco, by excess of food or by the products of intestinal stasis, if they exist, should be stopped, goes without saying. In cases of hypertension in which symptoms of diabetes, of gout or of obesity are also present something can be accomplished by an appropriate dietetic regime directed toward the particular vice of metabolism concerned. The hypertensive states that accompany Graves' disease or those met with in association with thyroid adenomata can sometimes be benefited by strumectomy. The best results, however, in prophylaxis and in causal therapy are doubtless obtainable through careful supervision of families by general practitioners, who are in large part responsible for the education to health of the

people among whom they practice. Hygienic education is, of course, important for all. It can be especially helpful in families predisposed to high blood pressure, to arteriosclerosis and to Bright's disease. Physicians are convinced that a sensible diet, regular hours of work, rest and recreation, good bathing habits, proper care of the emunctories, avoidance of excesses of all sorts, the cultivation of self control, and the maintenance of a well balanced life with normal satisfaction of all the human desires and instincts will go far toward promoting health and longevity and toward preventing the development, even in the predisposed, of chronic cardio-vascular-renal disease.

And even after a hypertensive process has set in, more can be done for the patient by educative measures than in any other way. Speaking on high blood pressure at the Ohio State Medical Association last year, I said:—"Psychotherapy, in the broad sense of dispelling fear, of inspiring confidence and hope, of educating the patient regarding the nature and course of his malady, of guiding him toward a more hygienic mode of life and of cultivating in him the ability to face the realities with serenity, will be found to be the most beneficently potent and serviceable agent that we possess." I believe that most internists of experience will concur with this opinion.

Among the laity there is much fear of high blood pressure, for the public, too, has learned that, in the long run, patients with high blood pressure die from uraemia, from heart failure, from cerebral apoplexy, or from terminal infection. But it is a mistake to allow patients in the early stages of hypertension to suffer too much from fear. Physicians now know that patients may manifest high blood pressure for many years and even for decades before any serious complications set in. Since the blood pressure is measured now-a-days as a routine clinical test in all patients who apply for diagnostic studies and for examinations for life insurance, it is important that the laity should be instructed regarding the earlier and more benign stages of the hypertensive process underlying it, for he is all too prone to have in mind, when high blood pressure is mentioned, only the malign sequels of the advanced stages.

Much can be done by physicians to dispel fear and to arouse hope in a hypertensive patient by explaining to him his precise situa-

tion after it has been thoroughly investigated. The physician should assure the patient that he will be given definite instructions how to live in the way best suited to cure, to arrest, to delay or to mitigate, according to the stage of the process that is found to exist. Unnecessarily frequent measurements of the blood pressure should be avoided. When a patient has been made to understand that a rise in his blood pressure is often a compensatory process that is beneficial in his circumstances and that the exact height of the blood pressure is far less important than the conditions that underlie it, a good start has been made. There are circumstances in the course of a hypertensive malady that make it important to raise the blood pressure rather than to lower it. Moreover, a patient, who feels that his physician, after carefully studying him, will give him the supervision that he needs and will teach him how to conduct his life so that he will neglect nothing that may be advantageous for the restoration or preservation of his health and working capacity, will usually be found co-operative and will become an obedient and grateful pupil. The physician who applies these several principles of causal therapy in the management of his hypertensive patients will find the practice rewardful.

FUNCTIONAL THERAPY IN HYPERTENSIVE STATES.

When hypertension is discovered early, it can sometimes be made to disappear entirely so that there is a restitution of normal function, simply by the application of the causal therapy outlined above. And in more advanced cases of hypertension, though the function cannot be restored to normal, the blood pressure can often be maintained at a lower level than before without harm to the patient. Causal therapy is, therefore, often also the best form for bringing the disturbed function back to normal.

Physicians, however, often make use of therapeutic measures intended to lower the blood pressure directly independent of its causes (functional therapy). Drugs, electricity, radium, baths, exercises and blood letting have all been used to lower the blood pressure.

Among the drugs for this purpose, iodine preparations, nitrites, benzyl benzoate and yohimbin have been most used.

Certain patients with chronic arterial hy-

pertension, especially when associated with outspoken arteriosclerosis, assert that they feel better during the continuous administration of sodium iodide and potassium iodide in small doses, 1 grain of each in water after each meal, the dosage being gradually increased until 5 grains of each are taken. Why, we do not know, though there are many theories as to the mode of action of the iodine preparations. Iodine preparations are helpful in syphilitic cases but, in my own experience, syphilis is not more common in hypertensive patients than in patients of the same age with normal blood pressure. The iodides do not lower blood pressure directly but probably exert their influence in some obscure way upon the metabolic processes, possibly through the thyroid. Of late, certain organic preparations of iodine have been introduced, notably, several combinations of iodine with proteins and fats (iodalbin, iodo-casein, iodoleine, lipiodine and sajodin). Many hypertensive patients, however, receive no benefit from iodine therapy, and a certain number of these patients feel much worse if they take iodine in any form. Hyperthyroid patients, especially, stand iodine preparations badly.

The inorganic nitrites, especially sodium nitrite, were formerly much used to lower blood pressure before the compensatory nature of hypertension was understood. Even now the nitrites are sometimes employed when the blood pressure is very high in the hope of avoiding accidents like cerebral apoplexy. Sodium nitrite, amyl nitrite, and certain organic nitrates (nitroglycerin, erythrol tetranitrate) are really helpful in the cases of hypertension associated with angina pectoris. A hypodermic tablet of nitroglycerine (1/100 grain) dissolved under the tongue often gives quick relief. In my own practice, I rarely use the nitrites and nitrates except in the latter condition. The Lauder Brunton method of drinking a pint of water containing potassium bicarbonate, potassium nitrate and sodium nitrite in the early morning for a period several times a year has had, however, considerable vogue in England.

A word of caution against lowering the blood pressure artificially with nitrites, except with the above definite purposes in view, would seem to be in order. For if the blood pressure be lowered too much by nitrites or by

methods other than those of causal therapy, harm to the patient rather than good may result. Once the arteriosclerosis that accompanies chronic arterial hypertension has reached a high grade, the blood pressure must be maintained at a certain level above normal in order that the patient's tissues may receive an adequate supply of blood. Cerebral, cardiac or renal decompensation can, in my opinion, be hastened by the injudicious use of nitrites.

Benzyl benzoate whose therapeutic properties have been studied recently by Macht has the power of lowering the tone of unstriated muscle. Used principally to combat colic (uterine, intestinal, renal, biliary), it has been recommended also for the treatment of angiospasm. It has not been used sufficiently as yet in arterial hypertension to permit of a definite judgment as to its value. It is given in 5 minim doses (or better, in 20 to 30 minim doses of the 20% miscible solution).

The systematic hypodermic administration of the alkaloid yohimbin has also been used as a vasodilator, especially in hypertension associated with stenocardiac attacks. In order to prevent its stimulating effect upon the erection center and the respiratory center, it is usually combined with urethane, and a series of daily injections given for 20 or 30 days.

Electricity applied for five or ten minutes in the form of the high frequency current (arsonization) will sometimes reduce the blood pressure from ten to twenty points or more at a single sitting. Some patients have told me that they have felt much better after a course of such treatment but I have had no personal experience with this form of therapy nor with radium emanation, which for a time was much vaunted as a remedy for hypertension.

Carefully graded exercise, systematically kept up, is often followed after a time by a definite lowering of blood pressure in hypertensive patients. Fatigue and breathlessness should, however, be avoided. Walking on the level, mild golf, and gentle calisthenics, are suitable forms of muscular exercise for these patients.

Tepid baths exert a favorable effect upon the blood pressure but cold and hot baths are better avoided in advanced cases. In incipient hypertension, however, a patient may safely continue his usual form of bathing—a cool

shower in the morning followed by a brisk rub, or a tepid bath in the evening.

When a quick fall in the blood pressure is desired in an emergency, say in a vascular crisis with threatened cerebral apoplexy, nothing is more efficacious than blood letting. If the patient be plethoric, one need not hesitate to withdraw a liberal amount of blood from a vein at the bend of the elbow. In less urgent cases, however, rest, a little nitroglycerin or erythrol tetranitrate, and a brisk purge followed by a few days of a lacto-vegetarian regime, will accomplish all that is required in the way of a direct reduction of blood pressure.

REGULATORY THERAPY IN HYPERTENSIVE STATES.

Fully as important as the causal therapy mentioned above and much more important, in my opinion, than the functional therapy just referred to, is regulatory therapy in chronic arterial hypertension. By this I mean helping the body to react against the disease process or its cause.

In chronic arterial hypertension the organism reacts against the disease process by increasing the blood pressure through increase of the peripheral resistance and through hypertrophy of the heart, by increasing elimination by the kidneys or attempting such increase, and, when the kidneys are insufficient, by increased elimination of the end-products of metabolism through the gastrointestinal tract and through the skin.

These reactions on the part of the organism give us clues for regulatory therapy. We must (1) support the heart; (2) protect the kidneys; (3) provide for suitable elimination through the feces; and (4) keep the skin active.

Every hypertensive patient becomes, sooner or later, also a cardiac patient. We should do all that we can to avoid over-burdening the heart muscle and, in case it begins to fail, support it. Small meals rather than large meals, the avoidance of physical over-exertion, and strict moderation in the use of tobacco and of alcohol, if the patient be permitted to enjoy them at all, are important for the protection of an over-burdened heart muscle. Obese hypertensive patients should undergo a carefully graduated reduction cure with the idea of taking work off the heart. Once the

heart begins to fail, and the patient becomes breathless on moderate exertion, or the amount of urine passed is diminished in quantity, the patient should be required to rest and cardio-tonic measures should be instituted. Powdered digitalis leaves ($1\frac{1}{2}$ grains) combined with caffein sodium benzoate (3 grains) may be given in capsule or pill thrice daily for a week, after which the dose of digitalis may be cut in half and the medication continued for a fortnight longer.

The hypertensive patient is likely, also, sooner or later, to become a renal patient. Even though there be no albumin or casts in the urine, the kidneys are scarcely ever normal when the hypertension has lasted for any considerable length of time. Great care, therefore, should be exercised to protect the kidneys in this disease by diminishing the work put upon them. Reduction of the protein intake and of the sodium chloride intake are important measures in this connection, though the degree of reduction of salt and protein necessary will depend upon the stage of the hypertensive process and of the renal involvement. Extractives should as far as possible be eliminated from the diet; the patient should be warned against ingesting foods rich in such extractives, particularly strong meat soups. The purin intake may also, with reason, be somewhat restricted; thus the patient should be warned against too frequent indulgence in sweetbreads, kidneys, liver, brains, and other foods rich in purins. Even the total fluid intake should be kept within moderate limits, for an excess of fluid raises blood pressure and throws increased work on the kidneys.

Daily evacuation of the intestines is of high importance for the hypertensive patient. Regularity of habit should be insisted upon, the patient going to stool at exactly the same hour each day. Drinking a glass or two of water on rising each morning and the same amount an hour before each of the other two meals will be found helpful. An abundance of fruit and green vegetables in the diet will help to overcome constipation and, if necessary, a little white mineral oil may be taken at bed time. These measures together with regular bodily exercise (calisthenics, walking, games) will usually suffice to maintain intestinal motility in the earlier stages of the hypertensive process. Patients with more advanced arterial hypertension do well to take a purgative once

a week or once a fortnight; a pill containing bluemass and colocynth taken at bed time on Saturday night and followed by a Seidlitz powder or other saline on Sunday morning will usually be found to be effective and beneficial.

The skin also should be kept active; its vasomotor reactions should remain labile. Chilling of the skin should be avoided. In climates with great variations in the daily temperature, wool, if it can be borne, should be worn next the skin in winter. Sufficient gentle exercise should be taken each day to cause mild perspiration. A daily bath with free use of the flesh brush during the bath, and followed by a brisk rub down afterward, will do much to keep the skin in good condition and to promote vasomotor lability. In the early stages of hypertension, cold baths are probably permissible, but in the later stages a warm bath is preferable.

SYMPTOMATIC THERAPY IN HYPERTENSIVE STATES.

Attention to the single symptoms of which hypertensive patients complain should not be neglected by the physician, for much can be done, even in advanced arterial hypertension, to make the patient more comfortable by means of symptomatic therapy. Here I refer to single symptoms that persist despite due attention to the causal, the functional and the regulatory therapy already outlined. Among the more important of such symptoms are insomnia, headache, dizziness, a sense of fullness in the head, certain neurasthenic symptoms (especially apprehension, anxiety and nervousness), precordial oppression or pain, and nocturnal polyuria.

The insomnia of which hypertensive patients complain is usually referred to the early morning (matutinal insomnia). The patients may go to sleep at the ordinary time but wake at four or five a. m. and are unable to go to sleep again. Often a half glass of milk or the eating of a cracker or a few resistance exercises in bed will be followed by another period of sleep. When the insomnia is more marked, mild hypnotics, say a teaspoonful of the compound chloral and bromide mixture of the National Formulary, five grains of veronal, or a little paraldehyde will suffice.

For the headaches from which hypertensive patients suffer, a five grain aspirin tablet, the same dose of pyramidon or $7\frac{1}{2}$ grains of phen-

acetin with $\frac{3}{4}$ grain of caffein sodium salicylate will usually give relief. If the headache be very severe, a quarter or a half of a grain of codein may be combined with these remedies. Morphine is rarely, if ever, necessary for such headaches, though it is unfortunately often given, and sometimes leads to drug addiction.

The neurasthenic complaints of hypertensive patients are often troublesome. Sometimes they are doubtless due to an associated cerebral atherosclerosis, but in many cases they seem to be more purely functional in nature. For these complaints a tactful psychotherapy in addition to general hygienic measures is the most efficacious. If the apprehension be very marked, small doses of sodium bromide or of the bromide and chloral mixture mentioned above, may be used.

For precordial oppression or pain, diuretin or theocin combined with caffein and monobromate of camphor will often be found helpful. If it be more severe, a tablet of nitroglycerin dissolved under the tongue will give prompt relief.

The nocturnal polyuria may be very troublesome, making the patient rise often at night, thus interfering with his sleep. If the bulk of the fluids ingested be taken before noon, and if the protein content and the salt content of the diet be suitably restricted, the nocturnal polyuria may grow less troublesome.

I have said very little about the treatment of the end-stages of the process with which chronic arterial hypertension is associated. In these end-stages we may meet with cerebral apoplexy, with myocardial insufficiency, with cardiac asthma, with pulmonary oedema, or with uraemic complications. When such complications appear, they must be met according to well-known therapeutic principles. But I would warn against too meddlesome a therapy in these end-stages. We should, of course, do everything that will really help, but we should not torture the patient by burdensome or painful procedures that are of problematic therapeutic value. We should rather protect him from all the unnecessary treatments that more wishful thinking would institute and do our best to bring solace and a euthanasic end when the time for it has arrived. In therapy, we do well to avoid the presumption of power that we do not possess. We should have clear heads that are aware of actual resources, but

a fuddled optimism that essays the miraculous is to deprecated.

CONCLUSIONS.

1. In the management of patients manifesting high blood pressure, we make use of causal, of functional, of regulatory and of symptomatic therapy.

2. Though causal therapy is hampered by the unsatisfactory state of our knowledge of the etiology and pathogenesis of the conditions that underlie chronic arterial hypertension, still much can be accomplished by removal of foci of infection, by the prevention of chronic intoxications and by lessening the wear and tear of life by education in physical and mental hygiene.

3. Through appropriate functional therapy the blood pressure may be directly lowered with avoidance of threatening complications at times of angiospastic crises.

4. A deliberately planned regulatory therapy that helps to support the heart, to protect the kidneys, to keep the skin active, and to promote elimination through the intestines does much to prolong the period of activity and of comparative well-being of the hypertensive.

5. Finally, a judicious symptomatic therapy, made use of on occasion, permits of the relief of many of the special discomforts and annoyances to which hypertensive patients are subject.

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ON THE EXTRACTION OF THE TEETH— A STUDY AND A PROTEST.*

By JAMES W. HUNTER, JR., M. A., M. D., Norfolk, Va.

It is a sad but truthful commentary upon the frailty of our human nature that if a small amount of a given preparation does some good, we feel that a larger amount will do more good and that a great deal ought to accomplish the best results. We may reason with ourselves that this is not so, but the thought remains and it is only through the combined experience of the ages that we have learned the fallacy of our assumption. Likewise, it is the common belief that if a certain drug be good for one disease it must also be good for another. It is again only by experience that we

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learn the truth. It is the repression born of a long line of experience, reasoning and education, that alone holds us in check and makes man, even as Pascal¹ has described him, a reed, the feeblest in all Creation, but withal a thinking reed.

With the advent of the doctrine of focal infection and the demonstration by William Hunter² and others that the greatest sources of infection lie in the teeth and tonsils, there has arisen within our profession a group of men who would attribute all of our ills to the teeth or tonsils. Working upon this theory there have been cures almost miraculous. Aches and pains have disappeared, anaemias have given place to normal haemoglobins and the praises of the new treatment have been lauded to the skies. And, as we have said above, the old tendency has arisen: If, by the extraction of one or two teeth the patient has been benefited, why not remove them all? Surely, he will more speedily recover. But will he? In return for a toothless mouth, what have we to offer? Have we not been over-enthusiastic? Or, again, if the extraction of a tooth has resulted in an improvement in one patient, does it necessarily follow that the extraction of all the teeth of another will cure him? To be more than frank: Is such a procedure ever justifiable?

It is not my intention in any way to dampen the enthusiasm of many of my professional confreres, but it is distinctly my purpose to state clearly and definitely that there are centers of infection other than the teeth or tonsils. We all know this. Have we not seen the most remarkable improvement in patients after the removal of a diseased appendix, or the drainage of a pathological gall-bladder? Have we not noted an improvement after the free incision of any abscess? If we suspect pus, we must find it. But we must not expect that the teeth are responsible for all of our ills. There are other centers of infection. But, as the teeth are perhaps the members most frequently infected, they must be thoroughly examined both clinically and roentgenologically. We must not pass them by until we are entirely certain of their innocence.

Some months ago Dr. X., aged 40, consulted me in regard to his teeth. He suffered with severe rheumatism. His tonsils, which were found diseased, had been removed. His habits

of living had been most moderate. His entire history was distinctly negative. On account of many fillings and devitalized teeth he had been advised to have all of his teeth extracted. Here was a case for study. Accordingly, roentgenograms were made of his mouth and every tooth carefully examined. Yet every tooth was negative. "My dear doctor," I replied, "it is my opinion that your teeth have nothing whatever to do with your condition. You may do as you please. But it is my advice to let your teeth alone until a focus of infection is distinctly demonstrated." Was my advice sound? Would the extraction of Dr. X's teeth have been of benefit? I remember another case. I was consulted on account of rheumatism and a roentgenological examination of the teeth requested. These, as before, were negative, but, upon careful questioning, an old Neisserian infection was admitted. The teeth remained untouched and the patient has regained his strength.

In direct contrast to this, I met sometime ago a friend (whom, by the way, I have never seen professionally) and to me he explained that, acting upon the advice of his physician, all of his teeth had been removed. He felt fine, had driven his motor car several hundred miles and was more than rejuvenated. Here it seemed was a logical example of the wisdom of the removal of septic teeth. Now, as I have explained, this gentleman was not my patient and I have never looked into his mouth. But I would explain that, as he belongs to the class of prosperous merchants and has always lived a clean and wholesome life, I have no reason for thinking that his teeth presented anything more than one would ordinarily find. The question arises: Was the wholesale extraction of this gentleman's teeth a justifiable procedure, even though it is admitted that in return for a toothless mouth there had been a perfect restitution of health? Would not the extraction of one or two really diseased teeth have been all that was necessary? Such would seem to be the opinion of Barker³. He says: "The time has come for plain speaking on this point. The *Literary Digest* recently made a long citation from an article on the unnecessary extraction of teeth. We must see to it that this abuse, so far as it exists, is perfectly censored, for otherwise justifiable extraction will become difficult." My friend's teeth had never been roentgenologically examined and

were extracted solely upon the advice of his physician.

If the teeth were a series of ivory pegs inserted into stone sockets, to paraphrase William Hunter, how many of our ills would be remedied. All that we would have to do, to be relieved of our suffering, would be to consult an ivory carver, who would make a new and fashionable set whenever we pleased, studded with gold, platinum or diamonds, as we preferred, and the stone-mason, who, chiseling new receptacles, would cement them into their proper places. "But the teeth being what they are, namely, highly developed pieces of bone tissue, possessing a richer blood and nerve supply than any piece of tissue in the whole body, and planted in sockets with the closest vascular relations to the bone and soft tissues of the periosteum and the gums," such a procedure is not to be entertained—nay, more, the most careful surgical manipulations must be conducted in the mouth. If life and health were dependent upon a game of chess, it would be our duty to learn the game. As life and health are in a large measure due to the perfect functioning of our teeth, it becomes our duty to study their anatomy, their physiology and their pathology.

A general description of a single tooth will suffice for all. It is composed of a substance called dentine, covered above the gum by a dense layer called the enamel and below the gum by one known as cementum. The upper portion assumes various forms, being as a chisel in the case of the incisors, a single cusp as in the canines, double cusps in the premolars or bicuspid, and with several cusps in the molars. Likewise, the roots assume different aspects. The incisors and canines have but one root, the premolars or bicuspid two, and the molars two or three, according to the position which they occupy. But it is important to note that the dentine is microscopically almost as complex as the Haversian system of the bones. Fibres of different densities alternate; tubules are supplied as a means of carrying nutriment. There is also a central canal running from the apex or extremity upward, containing a nerve, an artery and a vein. This is true of every root. As the canal extends upward it becomes larger and forms the pulp chamber and in this we have a plexus of artery, vein and nerve. This is, however, not the only method of nourishing the tooth. It

is set into one or more alveoli in the upper or lower maxillae, as the case may be, and is, therefore, surrounded by a double layer of a highly vascular membrane, a modified periosteum, known as the peridental or periodontal membrane. Thus it is seen that, while the tooth is essentially a bony structure, it differs radically from the usual bone and, though it is highly specialized, it is subject to the same diseases as other osseous tissues.

It will be quite well to study the function of the teeth. If they had no function, Nature would not have provided them. All of the troubles of toothache, of painful extraction, of surgical manipulations, would have been avoided. But they have a duty to perform. Primarily, their function is for chewing, for masticating, for mixing the food with saliva. If we possessed a gizzard, as in the case of birds, we might pick up sufficient gravel to dispense with them. But such is not the case. If our natural teeth are gone, we must provide ourselves with artificial ones. It must be well noted that nowhere else in the body is there provided a substitute. If we are to preserve the best health, we must foster the art of chewing. But this can only be as long as the teeth remain intact. No matter how clever the dentist may be, he can not make teeth as good as those that Nature has provided. Most of them are like Tennyson's brook. To paraphrase: They slip, they slide, they bruise, they glide; and this goes on forever.

With the advent of education there have come various changes in our mode of living. We no longer dwell in caves. We no longer depend upon furs or skins. We are no longer the creatures of chance. Nor are we altogether the victims of the law of the survival of the fittest. With civilization there has come a mixed diet; our food is cooked. Consequently, the burden of chewing has been greatly lightened. The same strength is not required of the teeth and Nature, being conservative in what she provides, has provided us with weaker ones. Moreover, improper articles of diet have become popular. Of these perhaps the greatest is some form of sweets. Too much candy is injurious to the teeth. But I must explain that this again is one of the evils of civilization. We are living at a rapid rate. We crave stimulants; hence the craving for food or drink easily oxidized; hence the de-

mand for the carbohydrates and especially for sugar and candy.

But improper food or an excessive indulgence in sweets is only one of the factors that has made for bad teeth. A neglect of the simpler hygienic precautions is also to blame. Food has accumulated and remained between the teeth, to decay as in other parts of the body. The toothbrush has been a neglected instrument—a condition appalling and not confined to the ignorant elements of society. Thus, a fellow student at college received one day a letter from his sister describing a party given by one of her friends, in which the writer stated that the teeth of Mary Jane, which were usually of a greenish color, had for once really been cleaned. Now, who is responsible for this? The patient? Yes. The parent? Yes. The family physician? Undoubtedly. The obstinacy of the first, the neglect of the second, and the indifference of the third, are in large measure responsible.

To these there shall be added an heredity. Bad teeth, like bad health and poor physique, are passed from father to son. Nay, more, the transmission of certain diseases, notably lues, affects them. The strange, sad law, so aptly written in the decalogue, that the sins of the fathers are visited upon the children unto the third and fourth generation, is just as true today. Then, too, misfortune presents itself in other ways. Diseases of childhood, the administration of certain drugs, adenoids and hypertrophied tonsils modify the teeth, their structure and their function. And here again, it becomes the duty of the family physician to be most unrelenting in the course of his examinations. For these sins of omission, heredity and acquired misfortune, the victim can not be justly blamed.

It is here that a dental problem of the greatest complexity presents itself. If a septic tooth be removed from the mouth of a child there is a strong probability that the jaw will not expand properly. Consequently, abscesses are prone to develop in the second set, even before the teeth are erupted. Disease has become rampant in the mouth. Yet, on the other hand, as we have said above, if the offending tooth has been removed, an improper development and articulation has been caused, a field for the orthodontist almost limitless. Indeed, to provide a symmetry, there are some who have advised the removal of the three corresponding

teeth, when one of the primary teeth has become affected. But, be this as it may, I would call the attention of the members of my own and of the dental profession to the care of children's teeth, to prophylaxis, to scrupulous cleanliness, to repeated examinations. For, if the doctrine of focal infection be true, it will explain in many instances the existence of puny and defective children.

And prosthesis is also often to be blamed. Crowns and bridge-work, as William Hunter has expressed it, "built in, on and around diseased teeth form a veritable mausoleum of gold over a mass of sepsis to which there is no parallel in the whole realm of medicine and surgery." And it is especially to the word *diseased* that Hunter has directed our attention. It is my opinion that no root or tooth should be used until it has been roentgenologically examined and pronounced sound. I do not like bridges. I do not like gold crowns. It is the experience of most roentgenologists that these are the places for sepsis. I hate to see good teeth ground down and used for abutments. I dislike the gold crown that covers up a tooth whose upper portion is gone. For I realize in the latter case the grinding necessary to prepare the natural crown for its gold covering, that no air can circulate, that malocclusion often results, that no ingenuity can incorporate the gold edge into the substance of the enamel, that the admission of germs is an ever present possibility and that the crowding of the inter-dental spaces is a constant source of irritation often accompanied by discomfort or even pain. It is not my desire to preach the doctrine that such dentures as crowns and bridgework must not be used. Prosthesis, like examinations in schools, is a necessary evil. But let me say that the future welfare of the mouth must be considered, that we should observe well the condition of roots and abutments, that as little manipulation be done as is consistent with the best work and that particular care be taken that the force of occlusion and grinding be distributed evenly and properly.

But perhaps the most perfect night-mare to both physician and dentist is the problem of the root canal. It is my idea that if the pulp chamber be entered by a necrosis of the enamel or dentine the pulp must be removed. The insertion of a metallic filling against a pulp in the experience of most of us invariably gives

rise to an apical abscess. And may we voice our opinion against the use of arsenious acid for destroying the pulp? If the action of this drug were limited to the pulp, we might pardon its use; for it is an easy and comparatively painless method of destruction. But what of the dentine? Arsenic will produce a necrosis of this tissue as well as of bone. Then, too, let us recollect the appearance of the destroyed pulp, a nasty, putrescent mass, easily capable of carrying infection to the apex. There is only one correct way of removing the pulp. It must be removed forcibly and under the most rigid aseptic technique. Thanks to the use of conductive and local anaesthesia the pain can be controlled. But the removal must be thorough; the canal must be filled as completely as possible. Here again, the use of the roentgen ray must be had and yearly examinations made thereafter; for, in spite of the best technique, apical granulomata often develop.

I have taken up the question of the root canal and the destruction of the pulp at some length. As no one now uses cotton soaked in creosote or other strong antiseptics or "mummifying pastes" as a root filling, these can be passed over. Suffice it to say, that they are destructive and that apical abscesses sooner or later develop. But, like Head,⁴ I cannot believe a tooth with a root canal properly filled as dead. He says: "The real nourishment and maintenance of a tooth comes from the membrane supporting it in the tooth socket." Or, again: "If a tooth becomes infected, it may lose all gum attachment and die, but a tooth deprived of its pulp may still contain healthy cementum, dentine and enamel, all of which can be surrounded by healthy peridental membrane. Such a tooth is very much alive and should not be looked upon as dead, but as a living member capable of performing its valuable functions." With these facts before us, namely, that a necrosis extending into the pulp chamber calls for the removal of the pulp and that no pains must be spared for keeping the dentine healthy, that no sepsis shall be admitted, the root canal filling becomes of the utmost importance.

The morbid anatomy of a diseased tooth does not differ essentially from a pathological process elsewhere. All that it is essential to keep in mind is the normal anatomy and the disturbing or infecting agent. The processes are only specialized results upon specialized tis-

sues. Thus, we may have a necrosis of the enamel, cementum or dentine, a congestion or infection of the pulp with its artery, vein and nerve, an inflammatory condition of the peridental membrane, a destruction of the maxillae or alveoli and the absorption of any portion of the dental system. We must further consider the cause of the destruction, the formation of pus, as pyorrhoea or apical abscesses, and the probable affect upon the system. Indeed, it is this last that has led to the great amount of research into dental pathology. For, as we have said above, if we could treat the teeth as we would carved ivory, we might fix them to suit ourselves and no harm could result.

But this is not so. The surroundings must also be considered. If a dental infection can produce a systemic infection, can not some systemic disturbance as well be a cause of dental infection? Hence, the logic of a complete examination of our patient. There are, as we have remarked above, centers of infection other than those of dental origin. Says Alvarez⁵: "I believe that we have lost our heads over the thing and that the time has come to call a halt. Men have obtained such beautiful results in some cases by extracting teeth that some of them are now trying to explain most disease on the basis of focal infection. In practice they pull the teeth first and if the patient returns unbenefited, they can then look to see what is the matter with him." Barker remarks: "Still another difficulty that I would mention is the abuse of tooth extraction by physicians who work independently of expert dentists, and who order wholesale extractions that are not indicated. A patient has chronic rheumatism and the doctor orders all of the teeth out without having a thorough examination made to see how many, if any, teeth are really infected. I have seen some melancholy examples of this; the whole mouth had been cleared of teeth, though the patient asserted that only two or three of the teeth were non-vital and even these had not been examined roentgenologically." With such opinions as these, can any examination be too complete?

In a recent address, Dr. W. J. Mayo⁶ has explained that it is by what we see that we learn; that the senses of touch and hearing are very defective. He referred especially to the "romance of the chest." It is by what we see that we learn; it is by making ourselves

see and interpreting what we observe that we progress. Is not this true of the dental sciences? Is there a greater romance than that of the teeth? And yet we can learn so simply. All we need is a series of good roentgenograms of the mouth. These taken in conjunction with the history and physical findings should give a correct diagnosis in almost all of our cases. We must work in harmony with our dental brothers. McCormack⁷ pleads for a standardization of roentgen technique: "It can and does produce radiograms that can be relied upon as the physical basis for approximately 75 per cent of the correct diagnoses of all dental lesions. Not only does such standardization bring out clearly and unmistakably the facts about conditions that may be suspected by the clinician, but it also brings to light, in numerous cases, conditions that are wholly unsuspected. It gives the clinician what should be the very starting point of his diagnosis." And again: "It is only by means of accurately made radiograms of the entire denture that the dentist can ascertain all the facts he should seek. I contend that dentistry can not achieve its best results without routine use of full-denture radiograms."

But it must be observed that McCormack has emphasized the words *standardization* and *accurately made*. It is only by good roentgenograms that we can achieve the best results. These should show the teeth in their correct relation to the alveolar processes of the maxillae and to each other. They should show definitely the varying densities of the different osseous tissues. They must show clearly and definitely the pulp chambers and root canals. The apices must be clearly visible. All structures must be finely defined. Such roentgenograms, I grant, can only be obtained by the expert; but it is only upon expert work that we can rely. It will be remembered that the teeth are set upon a surface curved from within outward, often from above downward, and that but a small number can be examined roentgenologically at one time. It is the problem of the map-maker. It becomes distinctly a problem of representing a curved surface upon a plane one and of eliminating a distortion. With a long distance the rays are more nearly parallel. But, even after all is said, there is in all roentgenograms of the teeth, as in the Mercator system of making maps, some

distortion; and this must be distinctly remembered.

But the crux of any good roentgenogram lies in its interpretation. A technician can be trained to make a perfect roentgenogram, but it is only a skilled roentgenologist that can interpret it. Here arises a conflict between the medical man and the dentist. Each tends to his own interpretation. It is only just that we take into serious consideration the opinion of the skilled dental roentgenologist. He is more conversant with the structures of the teeth than we. It has been my good fortune to have learned much from him. It has been my privilege to be taken into the confidence of the better dentists of my native city and to have discussed their problems with them. I have had opportunities to refute or confirm my diagnosis both by viewing the removed tooth and to have had a report of the findings. But I would call the especial attention of all to the fallacy of some interpretations. The shadows of the mental and dental foramina must not be confused with infective granulomata and the normal markings of the antra interpreted as foci of infection. Likewise, the molar shadows must be recognized.

And, above all, the location of pus or infection must be carefully sought. A peridentitis is not an abscess. It may be a forerunner of pyorrhea but, while it remains simply a peridentitis, it is not a pus producer. Nor is the thickening occasionally seen around the alveolus to be regarded as a signal for alarm. It is the abscess around the apex and the formation of pyorrhoeal pockets by the necrosis of the alveolar process that must be viewed with dismay. But even here the size and position must be considered. If the lower one third of a tooth be firmly held in place by the socket and its pulp be intact, I can see no reason for its removal. I think the point well taken that the septic foci be well curetted and drained. Give Nature a chance to act. Likewise, I feel that a small abscess upon one root of a molar, while the others remain intact, should be given a chance. The operation of apicectomy must be considered. The same thing may be said of the teeth with but a single root. If an apicectomy offers anything I see no reason for not attempting it. If the periodontal membrane be intact and the gums good, the dentine may be nourished through this means. In other words, the operative possibilities for

cure must always be recognized. But in the case of large abscesses, of extreme necrosis, of pyorrhea involving teeth already pulpless or devitalized, there is no treatment but extraction. There can be no half way measures. And let us remember well that it is of the infection and not of the teeth that we desire to rid the system and that no extraction is complete until the apical granuloma or other diseased appendages have been removed.

If you will recall the case of Dr. X., which we have reported above, I strongly advised against the removal of any teeth until a focus of infection had been definitely located. I thought and still think my advice sound, but I now feel more so, and it is with much pleasure that I can quote no less an authority than Dr. Clarence J. Grieves⁸. He sums up an exhaustive study of pathological teeth as follows:

"The writer is just as confirmed a believer in the doctrine that apically diseased teeth are infective foci, which may cause systemic disease, as he is in the fact that pulpless, apically well-filled, apically healthy teeth do not produce systemic disease and should be retained. The relation of these lesions to the various systemic diseases with which they are associated, has been discussed in previous papers. Quite recently it was ably presented * * * by Barker, whose statements the writer, from experience in private and hospital practice, heartily endorses. It may interest you to learn, in this connection, that the results reported by Barker, in clearing up focal infection, were obtained by radically removing and curetting all pulpless teeth periapically diseased, and by leaving in the mouth all apically well-filled pulpless teeth, not so diseased. Such results have been so obtained in the last seven years, with as many recoveries to the credit of this method as, if not more than, to the '100 per cent vitality' procedure. But it must also be noted that all other focal areas, elsewhere in the body, were likewise radically blotted out. Microscopic oral infection was not removed and macroscopic bodily foci ignored. Thus the focal 'hobby' was not over-ridden."

May I repeat my firm conviction that no tooth should be removed until a focus of infection be distinctly demonstrated? May I emphasize my conviction that all areas of sepsis be definitely removed? A conservatism on the one hand; a spirit of radicalism on the other.

If we are doubtful and the clinical symptoms acute, it is best to be upon the safe side and remove the suspected member. May I urge upon the members of my own and the dental profession a closer bond and union? May I urge the conservatism and ripeness of judgment that comes only through deep and thorough study? I earnestly protest against the ruthless removal of sound teeth. What reward has our patient for his pain, his discomforts, his toothless mouth? As Cicero⁹ has so aptly expressed it: "O tempora, O mores!"

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EPIDEMIC ENCEPHALITIS.*

By WALTER B. MARTIN, M. D., Norfolk, Va.

Since the fall of 1918 there has been prevalent in this country a disease popularly known as sleeping sickness. The characteristic pathological lesions of the disease are of an inflammatory nature and are found in the central nervous system, primarily in the gray matter at the base of the brain. This, together with the fact that one of the most striking clinical symptoms is a marked lethargy, led Von Economo¹ to apply to this condition the name encephalitis lethargica.

The present epidemic apparently had its origin in Central Europe during the winter of 1916, the first group of cases occurring in Vienna and neighboring territory. In 1917 the disease was recognized in France and in the early part of 1918 it appeared in England where it was at first confused with botulism. It was not until nearly a year later, i. e., in the latter part of 1918, that the first cases were observed on the eastern coast of this country and, according to House², it did not reach the

*Read at the meeting of the Norfolk County Medical Society, October 11, 1920.

Pacific coast cities until October, 1919. In 1919 and the early part of 1920 numerous cases were reported from many parts of the United States and Canada. During the past four years the disease has been recognized in practically every part of the globe, cases being reported from Austria, Germany, Italy, Switzerland, France, Spain, England, Ireland, North Africa, South Africa, various parts of North and South America and from Australia. While it has been pandemic the number of cases in any one community has not been large.

Flexner³ has suggested a parallel between the spread of epidemic encephalitis and of acute poliomyelitis and from this parallel draws a warning. The great epidemic of poliomyelitis that occurred in 1916 was preceded by many smaller localized epidemics and numerous sporadic cases. He warns us that it is possible that the present small but widespread epidemic of encephalitis may be the prelude to a more terrible outbreak. In any event it behooves us to be prepared for such an eventuality and, by the proper treatment and care of sporadic or isolated cases, to avert if possible this serious consequence.

CLINICAL ASPECT.—The characteristic lesions of the disease are widely disseminated throughout the central nervous system and their localization often varies in different cases. This fact explains the inconstant character of the clinical findings and it is only surprising in view of the variability of the pathology that the clinical picture remains as constant as it does.

The symptoms and signs of the disease are both general and focal. The most striking general symptom when present is the pathological lethargy. This may vary all the way from what is an apparent lack of attention on the part of the patient to a deep stupor or coma from which the patient can not be aroused. According to Flexner³ this symptom is present in 80% of the cases. In the milder cases response to questioning may be elicited by speaking loudly and one may expect to find the patient when aroused quite rational and well oriented. Lethargy may come on gradually and, as there is often at the onset of the disease severe pain in the head, neck, shoulder girdle or limbs, the use of an opiate at this time may apparently plunge the patient into coma. A tendency to sleep during the day may alternate with restlessness and sleeplessness at

night, or there may be an active delirium. Bassoe⁴ reports six cases with two autopsies showing the typical pathological lesions in which lethargy was absent.

There may occur also a marked depression without other disturbances of consciousness. Severe headache at the onset is common, which may be associated with dizziness, photophobia, nausea and vomiting. There is nothing characteristic about the temperature curve. As a rule it is not high, varying from 99.5 to 102. Occasionally it rises very high. In one case reported by Jauros⁵ a temperature of 108.5 was recorded just before death. In a case that I will refer to later the temperature at one time rose to 107.4. The length of the febrile period is variable but usually short, on the average lasting from one to two weeks, but the other symptoms will usually persist long after the temperature has subsided.

The onset may be gradual with headache, general malaise and symptoms referable to the respiratory tract, or it may be very sudden and stormy. Duration of the condition varies from a few weeks to many months. E. M. Hammes and J. C. McKinley⁶ report one case not yet recovered fourteen months after onset.

FOCAL SYMPTOMS.—Probably the most characteristic focal symptoms are those due to paralysis or weakness of the extrinsic eye muscles. The third, fourth and sixth nerves may be involved in whole or in part with a resulting ptosis and diplopia. There may be, however, merely a weakening rather than a paralysis of the extrinsic eye muscles. The patient is able to follow the moving finger but there is a noticeable inability to maintain the eye in other than the central position. The intrinsic eye muscles are also often affected with either a constriction or widening of the pupils and the light reflex is either very sluggish or entirely abolished. At this time the use of a mydriatic may leave the pupils widely dilated for many weeks. The motor fifth, the seventh and the ninth nerves are frequently affected. The paralysis or weakening of the muscles concerned in facial expression gives rise to the striking mask-like appearance of the face of these patients, resembling the so-called Parkinsonian mask. More rarely the segmental motor nerves are impaired with resulting monoplegias, diplegias, paraplegias, hemiplegias, spasticity of the muscles of the extremities and at times definite contractures.

Occasionally a typical wrist-drop is seen. Sensory disturbances occur but are much less common than the motor lesions. At times areas of anaesthesia or hyperaesthesia can be demonstrated. Severe pains in the shoulder girdle and limbs are fairly frequent and are probably of the nature of root pains. Signs of true meningeal irritation are infrequent. There may be some spasticity but this will usually yield on moderate pressure. The Kernig and Brudzinski signs are characteristically absent.

LABORATORY FINDINGS—SPINAL FLUID.—The most important findings from the diagnostic standpoint are in the spinal fluid. The fluid may be under slightly increased pressure and typically shows a moderate cellular increase of a mononuclear nature. Barker, Cross and Irwin⁷ in seven cases found five increased (11-133), one normal and one bloody fluid. Boyd⁸ found counts ranging as high as 244 but with many cases also showing no increase. Hammes and McKinley⁶, reporting twenty-seven cases, record cell counts from normal to 57 per cu. mm. The presence of a positive globulin reaction seems a more constant finding. C. Dopter⁹ has called attention to an increase in the sugar content of cerebrospinal fluid. The spinal fluid findings, while not consistently abnormal, are often an important diagnostic aid. A fluid under slightly increased pressure, with a positive globulin and a slight lymphocytic increase in a case in which poliomyelitis, syphilis and tuberculous meningitis can be excluded, is strong confirmatory evidence of epidemic encephalitis.

BLOOD.—There is no tendency toward anaemia in uncomplicated cases, both the red blood cells and hemoglobin remain approximately normal. The white cells are normal or a little increased. Counts as high as 24,000 have been recorded, but the average is 12,000-14,000.

URINE.—The urinary findings are of no particular significance. Albumin is usually present in moderate amount during the febrile period of the disease and there may also be a few casts. The association of somnolence with an albuminuria may suggest uremic coma but the differentiation can be readily made.

To summarize then, in a typical case one would have a condition that is characterized by a gradual onset, progressive lethargy, fever, paralysis of the extrinsic eye muscles with ptosis, diplopia and dimness of vision, weakness or paralysis of the facial muscles with a

resulting masklike expression accompanied by a moderate leukocyte increase in the blood, a positive globulin and slight lymphocyte rise in the spinal fluid and albumin and casts in the urine. As has been pointed out, this typical picture does not always present itself; lethargy may be replaced by restlessness, insomnia or active delirium, the eye signs may be absent, paralysis may be lacking or doubtful, or the blood and spinal fluid may be normal.

DIFFERENTIAL DIAGNOSIS.—Epidemic encephalitis must be differentiated from acute poliomyelitis, cerebrospinal syphilis, brain tumor, tuberculous meningitis, botulism and other forms of encephalitis. Differentiation from poliomyelitis would be exceedingly difficult should both diseases appear at the same time in the same community, and in certain cases probably could not be done. As will be pointed out later, many observers believe that the two conditions are either identical or very closely allied. The Wassermann reaction of the spinal fluid confirms or excludes a diagnosis of cerebrospinal syphilis, and in every case this test should be carried out. The character of the onset, eye ground changes and other evidence of increased intracranial pressure will aid where there is a question of brain tumor. Tuberculous meningitis may closely simulate epidemic encephalitis and the spinal fluid may at first present the same picture. In tuberculous meningitis there is, however, a tendency for the cell count to rise as the disease progresses, while with encephalitis the reverse is true. The temperature curve is different in the two diseases. The presence of a leukocytosis may help. Of course, the finding of the tubercle bacillus in the fluid or the development of the disease in an inoculated guinea pig will clear up the diagnosis.

When epidemic encephalitis first appeared in England it was confused with botulism. This is not strange as the initial symptoms of the two conditions have certain points of similarity. Both may have at onset vomiting, marked constipation, ocular palsies, difficulty of speech and a low grade temperature. The differentiation can be made on the history, epidemiology, course of the disease and the findings in the spinal fluid. There are few instances reported in the literature of more than one case of encephalitis in a family or other closely associated group, whereas practically

all cases of botulism occur in group epidemics. Other forms of encephalitis are rare, although cases undoubtedly occur associated with certain general infections. These cases are more haemorrhagic in character and a bloody spinal fluid is a more common finding. In some cases, however, the differentiation is only made by the pathologist.

PATHOLOGY.—Pathological studies on epidemic encephalitis carried out by investigators in different parts of the world are in close agreement as to the lesions found. The principal injury occurs in the gray matter at the base of the brain although changes have been observed in the cord, especially in the cervical region, in the meninges and in other parts of the brain. The lesions consist of an inflammatory reaction with a collection of round cells about the blood vessels and to a certain extent a cellular infiltration of the nervous tissue. There are also found numerous microscopic haemorrhages and an infiltration of fluid into the surrounding tissue. The pathological changes are very similar to those found in acute poliomyelitis. The lesions are usually very diffuse but at times may be aggregated. Explanation of the various ocular palsies is found in the changes that have been demonstrated in the corresponding nuclei of the nerves affected.

TREATMENT.—Little can be said as to any specific method of treatment. Rest in bed from the onset of the disease with careful attention to the diet and to the eliminative functions is indicated. Many of these patients are obstinately constipated and the bowels require especial attention. Sedatives or stimulants are used as the occasion requires. During convalescence careful nursing, massage, hydrotherapy and electrotherapy and a bland nutritious diet are required. Barker, Cross and Irwin⁷ recommend drainage of the spinal canal by repeated lumbar punctures. Netter¹⁰ has found urotropin of value and it would seem rational to use it along with drainage. Netter¹⁰ has also suggested the use of drugs to increase the secretions, on the theory that the organism causing the disease is present in the saliva and nasal secretions. He has tried salvarsan and neosalvarsan in these cases and found them of no value. G. Marinesco¹¹ reports three cases treated by intraspinal and subcutaneous injections of antitetanus serum with a clearing up of the symptoms within forty-eight hours. In

view of the findings of Loewe, Hirshfeld and Strauss¹² care of the nasal secretions would seem to be of especial importance in controlling the spread of the disease.

ETIOLOGY AND NATURE OF THE DISEASE.—The question as to the origin and nature of epidemic encephalitis is a difficult one to answer. There are three principal views that have been advanced; first, that it is due to the same causative agent as influenza; second, that it is a special form of acute poliomyelitis; third, that it has an independent etiological entity.

There is not much to support the first contention except the coincident occurrence in England, France and America of the two epidemics, and the association of more or less mysterious nona with the influenza epidemic of 1891 in Europe. Against the assumption are many facts. While it is true that epidemic encephalitis and influenza have occurred synchronously in many areas, they have also occurred independently of each other. The original outbreak of encephalitis in Vienna in 1916 began a year before influenza made its appearance. Boyd⁸ in reporting the Winnipeg epidemic states that there had been no influenza in Winnipeg for a year before the outbreak of encephalitis and that none of the numerous cases included in his report had had the disease. Again, there seems to be no relationship between the severity and extent of influenza in a given community and the number of cases of encephalitis. Following the great influenza epidemic of 1891 no condition similar to epidemic encephalitis was described in America. It is possible that influenza may prepare the ground for encephalitis lethargica by breaking down body resistance and thus allowing the invasion of an organism not capable of overcoming the resistance of a healthy body.

The evidence that this disease is identical with or allied to acute poliomyelitis is interesting but not convincing, and is principally derived from the fact that the pathological lesions of the two diseases, while varying in location, are very similar in character. Also, the clinical symptoms of the cerebral type of polio are somewhat similar to those found in epidemic encephalitis. In further support of this theory is the fact that Von Weisner¹³ claims to have isolated an organism from a case of encephalitis and reproduced the disease in a monkey. Wilson¹⁴ makes a similar claim. Cleveland and Campbell¹⁵ recovered an

organism which, when introduced into sheep, calves and horses, reproduced similar symptoms and lesions. Kraus¹⁶ and his co-workers have found a small coccus in horses suffering from a disease similar to encephalitis, while Loewe, Hirshfeld and Strauss¹⁷ report the isolation of an organism from the nasal secretions and spinal fluid of patients suffering from encephalitis and the reproduction of the condition in experimental rabbits. All the organisms described have been a very small coccus or diplococcus and bear a strong resemblance to each other and to the organism isolated by Flexner in cases of poliomyelitis. Barker, Cross and Irwin⁷ have suggested that the organism may be related but not identical.

Against the assumption of the identity of the two diseases are numerous facts. Seasonal occurrence—Encephalitis occurs principally during winter and spring; polio during summer and fall. Age incidence—Encephalitis occurs at all ages but principally in adults, while polio is strikingly a disease of childhood. According to Holt¹⁸, 80% of cases occur in children under four years of age. Paralysis of the muscles of the extremities are common in polio and are lasting, in encephalitis they are rare and fleeting. Typical cases of the two diseases have not been reported in the same epidemic, nor have combination forms been seen. The clinical course and terminal stage of the two diseases are different. Leukocytes as a rule range higher in polio, as does the cell count in the spinal fluid.

In view of the above facts, it seems probable that epidemic encephalitis is a distinct clinical entity. It is not necessary, however, to argue that it is a new disease or that it is of recent origin. Medical literature abounds with descriptions of epidemics of a lethargic type of encephalitis which from time to time has made its appearance in Central Europe.

As has been stated above, several investigators claim to have isolated a very small coccoid organism from cases of epidemic encephalitis. Of these the work of Loewe, Hirshfeld and Strauss^{12 & 17} is the most extensive and convincing. The organism described by them will pass through a Berkefeld filter and thus falls in the group of so-called filterable viruses. Spinal fluid and nasal washings taken from clinical cases of the disease were filtered through a Berkefeld filter and the filtrate cultured on kidney-ascitic fluid. They were able

to grow on this medium a very small globoid organism which when injected into the brain of rabbits produced the symptoms of the disease and similar pathological lesions and they have been able to again recover the organism from the infected rabbits. In fact, they have carried their organism through twelve generations, still retaining its infective characteristics. Using nasopharyngeal washings filtered as above and injecting the filtrate intracranially into rabbits, they were able to produce typical lesions in 78% of the cases tested. Out of seventeen nasopharyngeal washings cultivated they recovered the organism in eleven or 64%. Inoculation of rabbits with spinal fluid gave positive results in 75% of their cases, while cultures of spinal fluid were positive in 50%. While their work has apparently been carefully carried out and thoroughly controlled, confirmation by other investigators will be necessary before it can be fully accepted.

SUMMARY.

During the past four years an epidemic disease affecting primarily the central nervous system has spread over practically the whole world. It is characterized clinically by fever, malaise, lethargy, paralysis, especially of the facial and extrinsic eye muscles, a slight leukocytosis and, at times, changes in the spinal fluid: pathologically by inflammatory lesions, especially of the gray matter at the base of the brain with round cell aggregation about the bloodvessels, microscopic haemorrhages and cellular and serous infiltration of the nerve tissue. The nature of the disease is undetermined, but evidence rather points to its being an independent disease. Its etiology is at present unknown but the work of certain investigators indicates that the causative agent may be a very small globular filter-passing organism and that this organism gains entrance to the body through the nasopharynx.

Report of a case is appended.

B. H.—Female, white, single, aged 42, native of North Carolina. Referred by Dr. B. M. Baker.

COMPLAINT.—Pain in arm, dimness of vision, double vision, somnolence.

FAMILY HISTORY AND PAST HISTORY.—Not significant except that patient had attack of influenza in middle of January, 1920, followed by chronic cough. Did not remain in bed but was up and down.

PRESENT ILLNESS.—In the early part of February, 1920, patient became restless, could not sleep at night, complained of severe pain in both arms which grew progressively worse. During the month family noticed that face was expressionless, that patient was inattentive and would fall asleep at odd times during the day. The latter part of February following hypodermic of morphina for relief of pain, patient sank into a lethargic state which persisted up to admission to the hospital. At the same time she began to notice dimness of vision, complained of double vision. Was admitted to the hospital March 2, first seen on that date.

PHYSICAL EXAMINATION.—Temperature 99, pulse 92, respiration 22. Patient is a fairly well nourished, middle aged white woman, lying flat on her back in bed in no discomfort. Eyes are closed, patient appears stuporous, can be aroused easily, responds to questions intelligently. There is, however, a distinct lagging of response, voice is monotonous. Memory for recent events (for the day) is good; for events of the last three weeks is poor. Patient is well oriented as to time and place.

SKIN negative except for a few scattered petechiae.

HEAD.—No scars or depressions. No tenderness over the sinuses or any part of the cranium.

EARS.—Hearing normal, no discharge.

FACE.—Forehead is wrinkled, but otherwise the usual facial lines of expression are smoothed out giving a masklike appearance. Facial movements can be made but with difficulty. Difficulty in showing teeth and drawing mouth to either side. Can not whistle.

MOUTH.—Mucous membranes are of good color, tongue is coated, protruding with difficulty in the midline. Can push tongue to the left but can not to the right. Marked tremor develops when it is pushed over. Marked dental caries and pyorrhea alveolaris. Throat negative.

EYES.—Ptosis of both lids, pupils dilated, left slightly larger than the right, responds sluggishly to light and accommodation. All of the extraocular movements are poorly carried out. Patient rotates eyes only part way to the right or left and there is a tendency for them to return to the midline. Definite diplopia can not be demonstrated. Following one drop of 2% homatropine in each eye, pupils

became widely dilated and remained so with absence of reflexes for many weeks. Eye ground examination negative.

NOSE negative.

GLANDULAR SYSTEM negative.

LUNGS normal throughout on percussion, auscultation and palpation.

HEART.—Area of relative cardiac dullness measures $2\frac{1}{2} \times 9$ cm. P. m. i. in the 5th i. s. $7\frac{1}{2}$ cm. from the median line. Heart sounds normal in intensity, no murmurs, no friction sounds. Pulse equal on the two sides, regular in force and rhythm, volume full and well sustained. Rate 96 per minute.

Blood pressure 120/75.

ABDOMEN negative.

RECTAL examination negative except for external hemorrhoids.

GENITAL examination negative.

EXTREMITIES, ARMS.—Upper arms are slightly spastic. Well marked wrist-drop. Complains of severe pain in the arms which can not be definitely localized. No tenderness along the course of the nerves. There is a marked muscular weakness in both arms, deep reflexes of arms increased. There is a well marked hyperaesthesia over practically the entire surface of both arms.

EXTREMITIES, LEGS.—No muscular rigidity in the legs, normal muscle tone. Sensory examination negative. Knee kicks slightly increased, ankle jerks normal. Kernig and Brudzinski negative. Suggestive Babinski on the right. Abdominal reflexes present and normally active.

LABORATORY FINDINGS.

Blood		Spinal Fluid	
RBC	.....4,600,000	10 cc. removed	
Hgb.	.....79%	Slightly increased	
WBC	.....5,000	pressure	
Differential...	300 cells	Cell count 6 per cu. mm.	
(Wright's stain)		Globulin	
PMN	.....76.3%	Ross-Jones..Negative	
PME	.....4.3	Pandy's ....Negative	
PMB	.....1.3	Culture	Negative
SM	.....13.0		
LM	.....3.0		
Trans.	.....5.0		
No abnormal red cells			
No myelocytes			
Urine		Wassermann	
Reaction	.....Acid	Spinal Fluid...	Negative
Color...	Straw, slightly cloudy	Blood	Negative
Spec. Grav.....	1020		
Albumin	.....Negative		
Sugar	.....Negative		
Acetone	.....Negative		
Diacetic	.....Negative		
Microscopical	Negative		
		Stool	
		Parasites	Negative
		Blood	Negative

Successive examinations of Spinal Fluid showed:

	Cells per cu. mm.	Globulin
March 12	12 (all monos)	Negative
March 16	9	Negative
March 25	5	Negative
April 12	6	Negative
May 5	4	Negative

COURSE IN HOSPITAL.

Patient remained practically afebrile with occasional elevation of temperature to 99.5 until the 6th of April. During this time her general condition apparently improved, she was less lethargic, pains in arms were somewhat less marked, and apparently she was convalescing.

April 7-8 there was a sudden rise in temperature to 104. At this time her blood count showed 8,400 leukocytes; the urine one plus albumin and a few white cells; no significant change in the spinal fluid. Between April 8 and April 23 the patient maintained a high, somewhat irregular fever, ranging from 102 to 104.5. During this period the leukocyte count rose steadily to 16,300 with 85% polymorphonuclears on April 23, urine showing a large amount of albumin and many pus cells. During this period patient also became much more lethargic, sank into practically complete coma from which she could not be aroused. She apparently was suffering severe pain in both lower extremities, especially the right leg. This leg was constantly being drawn up. No definite abdominal tenderness could be elicited.

On the 23rd, in view of the urinary findings, a pyelitis was suspected. The kidneys were catheterized with recovery of practically normal urine, except for the presence of albumin from both kidneys. The night of the 23rd her temperature rose steadily to 106, was maintained at that level during the following day and the night of the 24th rose to 107.4. The patient's condition appeared desperate; respirations were rapid and shallow; pulse 150. During the night temperature fell slightly and continued to fall during the two succeeding days to a level of 103. Patient was still comatose. There was a gradual fall of temperature during the month of May, temperature finally reaching normal on the 1st of June and remaining so thereafter.

During this period the urine cleared up except for a trace of albumin and occasional pus cell. The white cells which had risen at one time as high as 23,800, returned to normal, and there was a gradual improvement of conscious-

ness. With return of consciousness, patient complained of severe pains in both legs. Pain in the arms had entirely disappeared.

Patient when discharged had so far recovered that she was able to return home on June 18. At that time she was apparently mentally clear, showed considerable wasting of the muscles of the arms and legs with contracture of the left arm and a slight degree of the right arm which was gradually improving. There were no outspoken paralyses but marked muscular weakness. Pain in lower extremities had gradually improved but had not entirely disappeared, and there was definite muscular weakness, especially in the right leg.

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SYPHILIS OF THE CARDIO-VASCULAR SYSTEM.*

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This is a rather difficult subject for the average practitioner to discuss with any degree of satisfaction, because he either lays too little stress on the existing pathology or he attributes the condition of his patient to some source other than luetic.

With our present laboratory facilities, including the Wassermann test, there is no excuse for us to pass these conditions by improperly diagnosed.

This subject is divided as follows: Arteritis, Aortitis Syphilitica, Heart Syphilis and Phlebitis Syphilitica, which will be discussed as above named.

ARTERITIS.—The classic work of Heubner, in which he called attention to the importance of lesions of the smaller cerebral vessels, which are always characteristic of endarteritis, in which the intima is the seat of proliferative change, still serves as the basis of our knowledge of the subject. The disease does not limit its ravages to the intima, for in advanced specific arteritis all coats may be invaded. The student of medical literature is referred to Virchow's comprehensive treatment of visceral syphilis, which is one of the most marvelous additions of the past century.

It can be easily understood how far-reaching the influence of specific arteritis may be, and how many organs may suffer at the same time. Such weakening as is caused by endarteritis specifica of the arterial walls may lead to miliary or large-sized aneurysmal dilatation, with the included secondary manifestations. (Aneurysms of the aorta and larger vessels are separately considered.) The changes which follow in the cerebral vessels and their baneful results, with prognosis, are considered with Cerebral Syphilis.

With practically all specific arteritis the

Wassermann reaction is positive. *Specific arteritis invading the coronaries* gives rise to threatening symptoms, including the complex of *angina pectoris*. It must be remembered that stenocardia is not always, even during early life, of specific origin. Heredity is an important factor in many; but in young subjects evidences of arteritis, including coronary invasion, should always lead to the strong suspicion of syphilis as a cause, to corroborative Wassermann tests, and specific treatment. If the myocardium is not too far degenerated and other vital organs are not invaded—kidney, brain, etc.—the prognosis is fairly good.

No specific arteritis is so far advanced as not to justify specific treatment, for in extreme cases we are often unexpectedly successful. Results have often been encouraging in cases which suffered repeated anginoid attacks.

Blood-pressure study of these cases needs to be correctly interpreted to give data of value. If the endarteritis has existed during a long period, has been extensive, has involved the renal and mesenteric vessels, there will probably be a high systolic pressure with a high pulse pressure, a tense and thickened radial pulse. These cases also have decided accentuation of the second aortic sound and often an aortic systolic murmur. The aorta is included in the process and shows the characteristic changes of specific aortitis. The result of blood pressure study alone in such a case is valueless; this must be added to all which the case presents before prognosis is justified.

Such cases as we have above mentioned are of serious character, they demand a guarded prognosis and before it is positively given, the effect of treatment should be studied. With some of these cases, the blood-pressure may be normal or reduced; such reduction is then evidence of myocardial weakness, and the prognosis is thereby unfavorably influenced.

Specific obliterating endarteritis may cause gangrene of an extremity or less striking trophic changes. We have found intermittent claudication, erythromelalgia, and symmetrical gangrene of the finger tips (Raynaud's disease), in which the underlying arteritis proved to be specific and in which rigorous treatment led to the recovery of some, and the material improvement of others.

Specific amyloid degeneration of small and large vessels is always serious; it is usually associated with similar degenerative processes

*Read before the Semi-Annual Meeting of Southwest Va. Medical Society, at Bristol, Va., September 29-30, 1920.

in other vital organs, and is not often relieved by treatment. When the kidney is involved in a similar process and there is anemia gravis, but little hope can be given.

For the purpose of the prognostician, it is necessary to assume that all unexplained arteritides in young subjects should be suspected to be of syphilitic origin, and demand the refinements of diagnosis and therapeutic tests before final conclusions are reached. Naturally, the prognosis of arteritis specifica depends largely upon the importance of the organs directly involved, and the influence of the changed relations.

AORTITIS SYPHILITICA.—Specific aortitis may lead to aneurysm of the aorta; it may be associated with non-specific arteriosclerosis of the aorta, but its seat is characteristic in almost all cases during its early existence. Uncomplicated specific aortitis causes irregular thickening of the aortic wall (fibrous thickening), with patches of thinner tissue between these plaques. It invades the ascending aorta and the arch. There is a distinct line of demarcation which separates the changed aorta from the valve and tissues of the aorta directly above it. The prognosis is uncertain. Physical signs of aortitis and subjective symptoms often disappear under treatment.

There are, according to Grassmann, accidental or functional murmurs in 40 per cent. of cases during the secondary stage of syphilis. In occasional cases during this stage, there may be threatening incompetence of the heart with low blood-pressure and dilatation of the right heart. Fever and anemia may be present. The prognosis is good in almost all of these cases. One of the dangers occurs from suddenly arising pulmonary edema.

HEART SYPHILIS.—There is no tissue of the heart in which specific disease may not cause organic change. We have mentioned coronary and aortic disease; the endocardium may degenerate, the aortic valves may particularly be the seat of specific deposit and change, the myocardium may be uniformly infiltrated and degenerated—it may hold one or more gummata—the pericardium may be involved; in all of these the Wassermann reaction is likely to be positive.

The Wassermann test has given us positive information concerning an enormous material which was formerly unexplainable. We refer to those heart lesions, the pathogenesis of

which we did not understand—including especially the degenerative rather than the inflammatory processes—usually found during middle life when arteriosclerosis and disorganizing changes are unexpected. The larger number of these lesions are aortic, endocardial, myocardial and coronary. The aortic lesions are in the ascendancy. In over 50 per cent. of these unexplained cases the Wassermann reaction is positive, and the prognosis is accordingly improved. Aortic valvular lesions are found with positive Wassermann reactions in over 55 per cent. of our cases.

There are unquestionably many specific lesions of the heart which never give rise to symptoms, which remain undetected, and are cured by the treatment of the constitutional infections, just as the large proportion of positive Wassermann tests of the cerebrospinal fluid and its cellular elements prove that changes in the nervous system may exist without subjective symptoms, which also disappear under similar conditions.

We have elsewhere called attention to the evanescence of physical signs, the disappearance of murmurs with positive organic disease. Recent additions to our knowledge prove these cases to be of specific origin, and materially improve their prognosis (Elsner).

The prognosis of specific myocarditis depends on the length of its existence, the associated lesions, and the effect of specific treatment. Certainly the prognosis of the degenerative diseases of the myocardium due to syphilis is much better than non-specific disease. Harlow Brooks says: "Nearly all cases of syphilis are well treated at least for so long as mucous membrane or skin lesions present themselves; just as long as these show, the patient is willing to submit himself to treatment and to observation. Hence it is, that at least for a time, many or most cases of cardiac involvement are correctly treated even though unrecognized."

Lesions of the heart of specific origin, including degenerative myocarditis, valvular lesions, arteritis of the heart vessels, may become latent; they may "heal and resorb under proper medication." There are unquestionably many heart lesions during the early stages of syphilis which give rise to no symptoms—which unchecked would prove fatal—but which are stayed and cured by specific treatment. Cardiac lesions of late syphilis may often be

threatening, the heart may be insufficient and yet under treatment there may be recovery or marked improvement. The prognosis cannot be given until the treatment has been sufficiently tested. Brooks says: "It is also true that a cheerful prognosis is not permissible until it has been determined just how much may be achieved by proper treatment. So frequently have I been deceived in both directions, that I now refuse prognosis until the case has been under treatment at least for a time—after which from the degree and character of the improvement or its failure, one may quite accurately prognose what may be expected with a further prosecution."

The Stokes-Adams phenomenon has in a few cases been found with specific degeneration of the intraventricular septum (His fibers); gummata have been found in several cases post mortem. Such cases offer a serious forecast, though improvement or recovery may follow rigorous treatment.

All cases of infiltrating specific myocarditis must be considered serious, and justify only a tentative prognosis until the horizon is cleared by treatment, including rest.

PHLEBITIS SYPHILITICA.—Changes in the veins may lead to phlebitis, phlegmasia alba dolens and erythematous nodes associated with fever and exacerbation of constitutional symptoms. In all of these conditions the prognosis is favorable.

TREATMENT OF INOPERABLE CARCINOMA OF THE UTERUS WITH RADIUM.*

By S. W. BUDD, M. D., Richmond, Va.

Cancer of the uterus takes a most conspicuous place in malignant disease affecting woman. Schroeder, in a series of nineteen thousand cases of women dying of cancer, showed that 6,548 had carcinoma of the uterus. Similar results were obtained by Wagner in his post mortem studies at Prague and Vienna. It is due to the frequency of uterine cancer that the incident of malignant disease in women is more frequent than that in men.

In our studies as to the distribution of cancer of the uterus, we find that the disease is unknown to the aborigines of Africa, and that it is less frequently found among the Asiatics than among the white race. It appears that the more highly a race becomes developed

morally and intellectually, the more susceptible it becomes to this scourge, yet, all observers agree that the disease is more frequently met with in the lower ranks of highly developed people, and that it is seldom seen in women who lead a life of ease and luxury. Oskar Muller in a series of 577 cases found that the patients were practically all of the laboring class. Sinclair states that "so marked is the difference of incidence of uterine cancer in the lower and higher members of society that it might be reasonable to affirm, that if we could place all the lower orders who suffer from privation and depressing environment for a generation or two in the position of the more favored we would stamp out cancer." Of course Sinclair oversteps the bounds of our imagination, but he emphasizes in no uncertain way that the disease affects primarily the working class.

The negro in Africa shows a racial immunity to uterine cancer, but in America, and especially in the southern States, this race seems just as susceptible to the disease as the white race. Changes in living conditions and possibly an infusion of white blood are responsible for this loss of immunity.

We have gained much valuable information from clinical or histological researches in cancer of the uterus. From this data the diagnosis of a moderately advanced uterine cancer is made with ease, and even the diagnosis of an early case should offer few difficulties to a careful and painstaking examiner. On the other hand, little guidance has been given us by gynecologists and pathologists as to the treatment and the origin of this disease. It is to be hoped that radium therapy in conjunction with operative procedures will offer in the future a more effective treatment for this dreaded disease.

Uterine cancers differ little histologically from those found elsewhere in the body. We recognize two types of them, one arising from the body of the womb and the other from the neck of the womb. The former is usually an adenocarcinoma, while the latter is most often a squamous cell carcinoma. The cancers of the body of the womb are not so malignant as those of the cervix. They may smoulder a long time in the uterine wall without invading the surrounding structures. Cancers of the cervix, on the other hand, are very malignant, and they invade the broad ligament and the

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surrounding structures early in their growth. The internal os and the musculature of the uterus act as a temporary barrier to the invasion of the cervical cancers to the uterus, but this resistance is soon swept aside and the growth rapidly spreads through the uterus. In carcinomata arising from the body of the womb, the metastasis to the surrounding lymph nodes is late, and the lumbar glands are the ones chiefly affected. In carcinomata of the cervix, metastases are relatively early and the glands at the brim of the pelvis near the iliac vessels seem to be the first to be invaded. Because of the early invasion of the surrounding structures, and especially of the lymphatics, operative intervention as well as all other modes of treatment have met with comparatively poor results.

The incidence of cancer of the body of the womb is apparently five per cent, while the remaining ninety-five per cent. arise from the cervix.

Uterine cancer is most insidious in its onset; in fact, the disease may be well advanced before the patient consults a physician for advice. Leucorrhea, hemorrhage and pain are perhaps the most important symptoms of the disease. With any of these symptoms occurring about the time of the menopause, a careful pelvic examination should be made and, if there be doubt as to the existing condition, a gynecologist should be called to verify the diagnosis. In this connection I would like to emphasize the importance of general practitioners paying more attention to their patients during the menopause period if surgeons and gynecologists are to get the best results from their operations.

The first indication of the disease is a persistent leucorrhea which may be mucopurulent, but which, as a rule, is serous in character. As the cancer grows and invades the surrounding tissues, the discharge which at first has but slight odor may become offensive, and, especially is this true, when the cancer commences to break down and suffer with a saprophytic infection. The odor of the discharge, according to some authorities, is characteristic but, in my opinion, the odor is nothing more than that arising from putrifying tissue. Hemorrhage is usually a late manifestation of the disease. A small hemorrhage and especially one that follows trauma may appear

early, but when a large spontaneous hemorrhage, or what the laity speak of as flooding, occurs the disease is pretty well advanced. This symptom causes more patients to seek the advice of a physician than any other. Pain is usually due to the invasion of the growth into the adnexa, and therefore it may be classed as a symptom of an inoperable rather than an operable carcinoma; although at times pain may be a prominent symptom from the very onset and may be responsible for causing the patient to have an examination while the disease is in its incipency.

Upon what do we base our opinion as to the operability of carcinoma of the uterus? Some state that, when there is no fixation of the womb, or when there is no invasion of the glands in the region of the growth, or when there is no invasion of the vagina, the disease may be treated by operative intervention. There must be a vast difference of opinion in our clinics as to what constitutes an operable cancer of the womb. Statistics vary in this regard from ten to fifty per cent. of all cases.

The mental suffering associated with carcinoma of the uterus, and especially with the inoperable variety, probably exceeds that of any condition known to medicine. The knowledge that a loathsome disease has invaded the organs that woman holds most sacred, and that her sexual life is forever doomed, coupled with the anxiety that some day she may bleed to death in one of her flooding attacks, makes her life a miserable existence. As the disease progresses, a fetid leucorrhea adds to her discomfort and she is no longer able to keep her secret for, wherever she goes or wherever she may be, the odor from the foul discharge haunts her. She realizes now that she is a *persona non grata* to her acquaintances and an object to be tolerated by her friends and family. Small wonder that more of these patients do not commit self destruction.

Inoperable cancer of the uterus up to several years ago was treated palliatively with cleansing douches, with cauterization, with curettement and with the ligation of the vessels, but the relief obtained by these procedures was temporary and the results probably did not justify the means.

During the past eighteen months, I have treated forty-five cases of inoperable carcinoma of the cervix with the following results: In nine, or twenty per cent of the cases, the

disease has disappeared locally but just what is going on in the adnexa or just when the disease may again appear in the cervical region it is difficult to prophesy. Four of the cases have shown no signs of the disease for a year, three for a period of six months or over, and two under three months. Twenty, or forty-four per cent. of the cases, have died and of these twelve were hopelessly involved when they presented themselves for treatment. Sixteen, or thirty-six per cent., are still under treatment and of these seven are doing well and nine are showing no improvement. There is one case that has been under observation for two years and is not included in the nine that have cleared up locally. So far as I can see, there is no evidence of the disease in the region of the cervix but she has an extensive metastasis to the glands of the groin and pelvis and x-ray plates show involvement of the spinal column. Of the forty-five cases, thirty-six complained of flooding and, of this number, thirty, or eighty-three per cent, have been relieved of this symptom. All of these cases (forty-five) suffered with a foul leucorrhea and of these nine, or twenty per cent., were relieved, while 22, or forty per cent., were improved. In fifty per cent. of all cases there has been a gain in weight and a temporary loss of cachexia that was so noticeable before the treatment was instituted. In three there was apparently an acceleration of the growth. In six a vesico-vaginal fistula has developed.

It is remarkable to see the improvement wrought in some of the cases after several radium applications. In reviewing my own histories and the records of patients treated by me for other physicians and supplied me by them, I am struck by the similarity of the reports. In brief, a favorable post radium note may read "a patient with a large epithelioma of the cervix, suffering with a cachexia, flooding and a troublesome leucorrhea, comes back today feeling much better. She has gained weight, the discharge has diminished, the flooding has stopped and the tumor has diminished in size." One of the most encouraging signs is the change in the mental side. She feels that something is being done for her, she is no longer so apprehensive of the future and she entertains ideas of recovery in spite of the fact that she is suffering from an incurable disease.

In the treatment of inoperable carcinoma of the cervix it has been our custom to advise an extensive cauterization of the growth before the radium is applied and, if during the treatment an exuberant growth appear in the region of the cervix, we again cauterize. We always like to have a crater in place of the cervix, and this crater can best be preserved by the cauterization.

After the soreness arising from the cauterization subsides, we apply needles of radium element into the growth and out toward the broad ligament. We apply two to four needles of twenty-five mgms. each and allow them to remain from twelve to twenty-four hours. Our doses of radium range from seven hundred and fifty to fifteen hundred mg. hours with no screening so that the patient gets the benefit of some of the soft rays as well as the gamma rays. The vagina is ballooned out with as much packing as it will hold so as to keep the bladder and rectum as far as possible from the zone that is being radiated. If there is much invasion of the vaginal wall, we think it best to apply the radium screened by brass and rubber and held in place against the growth, as well as we are able to do so by packing. It is our custom to repeat the treatment three times at intervals of three weeks. We then let a period of two or three months elapse and have the patient come back for another series of treatments.

In four of the nine cases that showed improvement, one series of treatments was sufficient to remove the condition locally. Three of the nine have required two series and one case required only one treatment.

In conclusion I would like to emphasize:

1. That cancer of the womb is primarily a disease of the working class.
2. That one third of all cancers common to woman are carcinomata of the uterus.
3. That a relatively small percentage of the carcinomata cases are operable.
4. That radium will not only relieve some troublesome symptoms arising from inoperable carcinoma of the uterus but will cure a certain percentage of them locally.

305 *Professional Building.*

Their Drawback.—Mrs. Blank (to laundress)—"And how is your newly married daughter getting on, Mrs. Brown?"

Mrs. Brown—"Oh, nicely, thank you, ma'am. She finds her husband a bit dull; but then, as I tells her, the good ones are dull."—*Boston Transcript.*

PITUITARY HEADACHE.*

By FRANK H. REDWOOD, M. D., Norfolk, Va.

The role that the pituitary gland plays in the production of a certain type of headache cannot be doubted. The group of symptoms and signs found in a new growth of the hypophysis is well known and, when present, the diagnosis is not difficult. But it is in the early and less easily recognized disturbances of the pituitary that we should pay more attention because this is the stage in which we are able to do the most for the patient. A frontal or bi-temporal headache may be the first sign of a disturbed secretion of the pituitary gland.

The cause of the headache is presumably an enlargement of the gland, which is due to some compensatory demand made upon it. The gland enlarges periodically, for instance, at the menstrual period and at the age of adolescence so that we should expect headache from this source to occur more frequently in women and young adults, which in my experience has been the case. This is the only gland of internal secretion which is situated in a bony framework, the clinoids in front and behind, the floor of the sella below, and the dura above, so that practically the only direction in which it can enlarge is laterally. If it were situated in loose tissue as are the other endocrine glands, it could enlarge from whatever cause, without producing pressure symptoms, but situated as it is in what might be termed a bony box, it is obvious that only slight increase in size is necessary to produce symptoms due to pressure. So there must be two necessary factors to produce a headache from this source, viz.: the size of the gland and the size of the fossa.

We are led to believe that a normal pituitary gland has a normal sella turcica. But given a case showing pituitary signs, the x-ray will show some alteration in the contour of the sella. We may find a very small and shallow sella with the clinoids bridging over the fossa, a sella of normal size but the clinoids in apposition, or a small sella with one or both clinoids eroded.

There are a number of conditions that enter into the question of why there should ever be a pathological enlargement of the gland. We know there is physiological enlargement at the

menstrual period and during pregnancy. Other glandular disturbances, too, influence the secretion of the pituitary such as thyroid or suprarenal disease and it is the opinion of Timme¹, that in this case there is a compensatory enlargement. An injury to the skull may be the stimulus to an altered secretion. I recently had such a case in a navy yard worker who fell from a scaffold and had a concussion of the brain. This man was a compensated pituitary case and the injury served as a stimulus to the gland, causing it to decompensate with the usual train of symptoms. The gland may be the seat of all kinds of tumors, cysts, etc., and frequently the first signs of a new growth in this region are systemic pituitary disturbances.

According to Pardee², this type of headache has three typical characteristics: its persistence, its location, and its response to glandular feeding. These patients will frequently tell you that their headache is in both temples, deep within the skull. It may be in the frontal region behind the eyes or, if of long standing, the most severe pain may be on the top of the head or in the occipital region. Some have headache every day, others once or twice a week. The pain lasts from one to twenty-four hours and at its height there is often nausea and vomiting. It is usually dull in character and described as "something in the skull." Eating sweets may precipitate an attack. A headache may sometimes be foretold by an uncontrollable desire for sweets and when this desire is satisfied by eating large quantities, an attack generally follows. These patients as a rule are sluggish, have no ambition and usually have a lowered blood pressure. This is due to a hormone between the suprarenals and the pituitary. Both are concerned in the metabolism of sugar; therefore the disturbed pituitary must call on the adrenals to help out in the struggle.

In examining these patients one sees a peculiar distribution of body hair. There is either an abundance of hair or it is very scant. In the female there is male distribution of pubic hair and vice versa if the patient is a male. The eyebrows are long, heavy and meeting in the midline forming a nasal eyebrow, or are very scant. The female may have a well marked mustache and a tendency toward a beard. The male has very little beard, shaving only once or twice a month. The skin is

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smooth and soft. The bones may be too long or too short and there frequently is a marked disproportion between the body and the lower limbs. The upper central incisor teeth are usually widely spaced and broad and the lateral incisors are frequently rudimentary. Some of the patients are quite fat and give a history of increasing in weight rapidly. Sugar tolerance is normal or increased. Blood sugar, of course, runs parallel with sugar tolerance.

I do not know of any disease where treatment is so gratifying as in the majority of headaches due to an altered secretion of the hypophysis. The feeding of pituitary extract will, in short time, decrease the headache, the nausea and vomiting will disappear, and the patient will be more comfortable. I usually start the treatment with two grains of the whole gland three times a day, given between meals. It has been my practice to use Burroughs and Welcome product, but any preparation is satisfactory if its freshness can be assured. Pituitary extract has not been standardized, therefore the strength varies according to the brand selected for use. Six grains daily (B. & W.) will be sufficient for the average case but larger doses may be employed if necessary. I have several cases that took sixty grains daily (B. & W.) for some time without ill effect. Blood pressure readings should be made frequently, as occasionally the pressure will increase. After the case has improved the dose should be decreased so as to give the gland a chance to readjust itself. According to Timme³, there are a certain number of cases that will cure themselves, as is shown in acromegals without symptoms.

During the past year I have seen a number of patients whose sole or chief complaint was headache. In eleven of these cases I have traced the complaint to a pituitary origin. All cases showing positive Wassermanns, urinary findings indicating nephritis, and reflex cases such as pelvic disease in women, have been eliminated. All cases with any associated disease that could possibly have a bearing on the headache are not included. Some of these cases had other complaints, for instance, convulsive attacks or diabetes insipidus, but all of them had headache. Of eleven cases, seven occurred in the female and four in the male. Seven had very small sellas closed in by the clinoids and four had sellas normal in size but the clinoids enclosed the fossa. Six had head-

ache every day, three every two or three days, and two once a month. One case had been troubled with headache since he could remember; the others from six months to seven years. In eight cases the headache disappeared entirely or has been greatly relieved, two cases of long standing have not been benefited in the slightest, and one case has not been heard from in several months.

The following are the cases in brief. Only positive findings have been enumerated.

CASE A. Female, age 40, complains of a pain in front part of head, radiating to the occiput, convulsive attacks, feels sluggish and has no energy. The skin is dry and the hair is brittle. Thyroid is palpable. Blood pressure is 100 systolic. X-ray of the sella shows a small fossa with the clinoids in apposition. The headache and sluggish feeling have disappeared and she has not had a convulsion since beginning treatment four months ago.

CASE B. Female, age 31. Sole complaint is a dull bitemporal headache of three years' duration. The pain is severe at times so that the patient is confined to bed and has had morphine for the pain. The blood pressure is 120 systolic and 85 diastolic. The sella is of fair size but the clinoids almost bridge over the fossa. Has been under treatment since March, with complete relief of headache except just before her menses.

CASE C. Female, age 16, complains of a heavy feeling in her head and is weak and sluggish. Is backward in school and the mother says has never been able to learn like other children. There is no body hair and the eyebrows are scant. The teeth are typical pituitary. The blood pressure is 120 systolic and 70 diastolic. The sella is very small and shallow and the clinoids are encroaching on the fossa. Has been under treatment since July, with relief from headache and marked improvement both mentally and physically.

CASE D. Female, age 32, complains of bitemporal headache and occipital headache, dizziness, and is constantly tired and sluggish. Her weight is 218 pounds. The blood pressure is 148 systolic and 85 diastolic. The sella turcica is of good size but the clinoids are in apposition. Has been under treatment since June, with marked improvement in the headache except just before her periods.

CASE E. Female, age 29, complains of bitemporal headache and polyuria. Blood pres-

sure is 140 systolic and 95 diastolic. Sella is smaller than normal, although not markedly contracted. Has been under treatment since August with relief from headache and a marked improvement in the polyuria.

CASE F. Female, age 15, complains of convulsive attacks, and a bitemporal headache which radiates to the back of the head and neck. The blood pressure is 85 systolic and 60 diastolic. X-ray of the sella turcica shows a small fossa bridged over by the clinoids. Under treatment since June, with complete relief from headaches.

CASE G. Male, age 35, complains of frontal and bitemporal headache. Is very tall and gives history of suddenly starting to grow. Female distribution of pubic hair and an absence of hair on the chest. The blood pressure is 136 systolic and 90 diastolic. X-ray shows a small pituitary fossa with encroaching clinoids. Under treatment two months without any change whatever in headaches.

CASE H. Male, age 22, complains of convulsive attacks and headaches which are bitemporal and frontal. Slightly enlarged thyroid. Female distribution of hair. Blood pressure is 114 systolic and 60 diastolic. The sella turcica is of good size but the clinoids are closer together than occurs normally. Under treatment since August, with complete relief from headache.

CASE I. Female, age 24, complains of frontal headaches and periods of depression. The thyroid is enlarged. The body hair is rather scant. Blood pressure 114 systolic and 78 diastolic. The sella turcica is small and almost enclosed by the clinoids. Under treatment since July, with complete relief from headache and a marked improvement in her depressed state.

CASE J. Male, age 30, complains of a frontal and bitemporal headache which radiates to the back of the head. The blood pressure is 118 systolic and 70 diastolic. The body hair tends toward female distribution. The sella is very small and shallow and the clinoids practically touch one another. Has been under treatment two months with no relief.

CONCLUSIONS.

1. There is a certain type of headache due to an altered secretion of the pituitary which causes a swelling of the gland.

2. This type of headache is located in the

frontal region or between the temples and occurs in patients showing pituitary signs.

3. In practically all cases of pituitary headache some alteration of the contour of the sella turcica will be found.

4. The majority of pituitary headaches will be cured by the proper administration of pituitary extract.

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ARTIFICIAL FEEDING OF INFANTS.*

By DWIGHT RIVERS, M. D., Lynchburg, Va.

The inability of some women to nurse their young is usually thought of as one of the evils of the modern times, but the occasional reference in the Bible and in writing of many of the old authors shows us that even in this period the children had the same fight for existence as at the present time.

In the beginning of artificial feeding of infants, horns were used for bottles with a sponge or perforated piece of leather for a nipple. This would hardly be considered giving the child a fair chance with our present knowledge of infant feeding. The old writers tell us that many mothers did not nurse their young, but they do not say whether they could not or would not. However, the result so far as the child is concerned was the same as now; but the chance for saving the life of the child is much greater at the present time.

The means of feeding children who are deprived of their natural food has always been carried on in one of the two ways. The first, and the one most in use up to the middle of the last century, was the employment of a wet nurse. The second, and the one most in vogue at the present time, especially in this country, is the milk of some domesticated animal. In America the cow is almost universally used.

It would seem that the question would be solved more easily by the employment of wet nurses, but the reason for the change from this method of feeding to the present is the class from which we are compelled to select the nurse. This is true more in America than in

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some of the foreign countries where they have a sturdy peasant class from which to draw the nurse; then, too, from an economic standpoint, the milk of some other animal is more practical, as many of the patients are unable to pay a wet nurse. Another objection to the wet nurse is that a change of their mode of living is necessitated when taken from a home of, at best, only moderate circumstances to one of greater luxury, and probably from a very active life to one of comparative ease, which serves to enrich the milk supply to such an extent that there is danger of causing digestive derangement in the patient. Another criticism of this method is the possibility of disease in the nurse, as tuberculosis and syphilis; but, if we can obtain a healthy woman who is satisfactory, there are many lives which can be saved by this method of feeding.

Until the beginning of the nineteenth century, the wet nurse was the principal means of feeding the unfortunate infants. It was not until the middle of the last century that anything which could be called scientific was developed from the very crude and empirical methods formerly in vogue.

The real aim in feeding infants is to cause the child to pass from the period of infancy to that of childhood with a normal development, both mental and physical. To do this it is essential to have the proper amount of food. This applies to quantity as well as to quality. The amount of food necessary to cause the infant to have normal development has always been a subject for discussion among pediatricians and the present time is no exception to the rule, and even now the greater part of feeding is done empirically.

In the breast-fed child, the amount of food is usually regulated by the hunger of the child, but in the artificially fed child this is in most cases a very unsafe plan to follow. In breast feeding, if the child takes more than it needs it is regurgitated with a greater volume to the stool and possibly some undigested food, but there are no untoward symptoms. In the artificially fed child who receives too much food there is likely to be vomiting and diarrhea, rather than simply regurgitation. Such a condition can usually be traced to one of the components of the food.

THE PROTEINS:—In studying the later works on infant feeding, we see the proteins making a change from the food more or less dangerous,

or as the real etiological factor of summer diarrhea, to the present belief that a high protein diet should be given in the same condition and, at the present, a greater part of the trouble is thought to be caused by fats and carbohydrates rather than by proteins.

The recent investigators have demonstrated the fact that all higher animal life requires protein known as complete. By this we mean a protein yielding all the amino acids necessary for animal life; also, it must contain in the form of salts, calcium, magnesium, sodium, potassium, iron, chlorine, iodine, phosphorus and sulphur. Cow's milk contains about three times the amount of proteins as does woman's milk. Not only this, but in cow's milk the casein constitutes about five-sixths of the total proteins, and the whey proteins, lacto-albumen and lacto-globulin, one-sixth; while in woman's milk the total proteins are not only one-third that of cow's milk, but the whey proteins comprise two-thirds while the casein is only one-third of the total.

The proteins of cow's milk, as in woman's milk, are first converted into peptones and finally into amino acids; nitrogen retention in infants taking cow's milk is quite normal and examination of the stools shows very little evidence of their not being thoroughly digested, so it seems that the proteins of the cow's milk are assimilated by the healthy infant as well as are those of woman's milk.

The more compact curd formed in the infant's stomach when taking cow's milk is probably due to the physical properties of the milk. The casein is an unstaple colloid held in solution by the lacto-albumen (Alexander and Bullock) so, from the small amount of lacto-albumen in cow's milk, we would expect a more compact mass to be formed. This coagulum may be partially or entirely prevented in various ways, as greater dilution, or dilution with some mucilaginous substance, as oat-meal gruel, by boiling or by the addition of one of the earthy salts, as sodium citrate. From the above, apparently cow's milk proteins are digested and absorbed as readily as are those from woman's milk; but Howland has asked the question, "Is there a possibility that the greater amount of proteins, two, three or four times the amount that the breast infant receives, is injurious to the eliminating organs or does it injure the organs, converting them into a form to be eliminated?"

Protein is in excess as has been shown by calorimetric experiments to increase the heat production. This was shown on two infants, in one of which the heat production was raised ten per cent, while in the other it was raised 26%. The proteins of their decomposition products may act as a stimulus to the metabolism of other food products. Normally, the child may take care of this extra heat, but with excessive atmospheric temperature and high humidity and possibly other factors to prevent heat elimination, it is obvious that the extra amount of heat may cause trouble. Hoobler's data for the elimination of proteins is:—

Percentage absorbed	96.1%
Percentage passed (urine and feces) ..	67.6%
Percentage retained	32.4%

The part eliminated in urine is in the form of urea, 45.4%. The remaining is ammonia, amino acids and creatinin.

The proteins serve three purposes; first, they replace that used up by the wear and tear of the body tissues; second, a small part is used for energy; third, the remainder, possibly 50%, is used for growth. Just how much protein is absolutely essential for the need of the body has not been definitely determined, but the amount in woman's milk is certainly not far wrong. The proteins taken by the infant, per kilo of body weight, are approximately doubled during the first year. We must bear in mind that proteins are indispensable to development and especially to muscular development. They also form a minor part in metabolism as is shown by the fact that the child will not grow even though his proteins could be increased to furnish caloric requirements.

Holt and Levine fed children on a synthetic food, exceptionally rich in proteins. After five or six days the children developed a fever which lasted as long as the high proteins were continued, but immediately subsided on the withdrawal of the food.

THE FATS:—The belief that fats are essential to the infant's welfare is unanimous. If from nutritional disturbance or any cause the child cannot take fats, it will not thrive.

The high fat percentage in human milk suggests that fat is necessary for the young child, but the difficulty comes in supplying this amount to the artificially fed child, as the fat of cow's milk is not taken by the average infant in the same amount as is supplied in

woman's milk without considerable risk of the digestive disturbance. This is thought by some to be due to the volatile fatty acids which are very much higher in the fat of the cow's milk, eight times as much (Holt). The freshness of the milk may also have a role to play in this condition.

The fats should not be increased to the extent that the child shows symptoms of intolerance, as this is the most persistent of any form of food intolerance and compels the reduction of fat to such an extent that the child cannot grow, and this intolerance may continue almost indefinitely. Some children will take a high percentage of fat for sometime, possibly several weeks, and apparently thrive, when for some cause, possibly no more than acute rhinitis, the tolerance gives way and the patient loses all that it has previously gained.

Fats so retard the emptying of the stomach that stagnation occurs at times and, with a high fat percentage and short intervals, there is an accumulation of fats in the stomach, so that in extreme cases the greater part of the fats given through the day may be obtained at the end of a day by the stomach tube.

Though there is a fat splitting ferment in the stomach (Sedgwick), practically all the fats are split in the small intestine and normally no more than one per cent escapes.

It may be said that forty per cent of the stool of the infant normally consists of fat, ten per cent neutral fat, ten per cent soluble soaps and fatty acids, and the remainder insoluble soaps. The latter, together with the absorption of fats, are greatly influenced by circumstances, as normally ninety per cent of fats are absorbed while in the case of diarrhea there may be less than fifty per cent.

One of the most discussed conditions caused by fat is one described by Czerny. In this the child is fat but sallow, his muscles are flabby, he is pale, gains slowly, and finally not at all. The stools are large, dry, light colored with offensive odor. To decrease the milk and add carbohydrates, as cereal or sugar, will usually show a marked improvement in the child. Some (Usuki) claim that this is due to a lack of carbohydrates rather than to excessive fats, and that the soap stools only occur when the carbohydrates are reduced as much as fifty per cent. The fat absorption is not interfered with to such an extent as to cause the clinical condition. The probable cause is in the min-

eral metabolism. Bahr^{dt} has shown that more calcium is passed in the stool than can be accounted for by the combining powers of the fatty acids, but could not determine in what form the calcium was lost. It may be possible that this is the cause of the poor condition of the infant. For the soap stools to form, there must be present fat and calcium, also proteins to cause putrefaction; but as Meyer has shown, putrefaction will not take place in the presence of fermentation. It is evident that besides the calcium, fat and proteins, there must also be a lack of carbohydrates to prevent fermentation. This condition can be cured by the addition of carbohydrates with no reduction in other ingredients of the food.

In the case of the child who has been overfed on fats, there is likely to result a diarrhea and vomiting. Langstein and Meyer have shown that in this class of cases there is an excess of the lower fatty acids in the stools and these acids by their irritative action on the intestinal tract have to do with the increased peristalsis. During the diarrhea there is a loss of alkalies which would normally act to neutralize the acids formed by the metabolic processes of the body. So, by this loss of basis, there really exists a relative acidosis. There may be either a loss of sodium and potassium and retained calcium and magnesia or vice versa. In the fat stools, the fat is present in large amount and can be readily detected microscopically. When stools like this are present, it is a good indication of a functional disturbance of fat digestion. The result of over feeding of fat is shown by the onset of fever, vomiting, diarrhea and convulsions and is obviously a very serious condition.

CARBOHYDRATES:—To this part of the food is given a great deal of the credit for the digestive disturbance which was formerly laid at the door of the proteins and fats, but at the present the latter foods are to a great extent disregarded and the principal attack is made on the carbohydrates. Lactase is present in early infancy and has been demonstrated in premature infants. Saccharose is not absorbed as saccharose but is split by invertase into dextrose and levulose. Maltose is partially absorbed without the action of digestive ferments.

Lactose, as it is the sugar found in mother's milk, would seem to be the sugar of choice for artificial feeding, but there are some cases

where this is probably not true. Lactose is more laxative than either of the ethero disaccharids and for this reason is not indicated when there exists a tendency to diarrhea. Cane sugar is less laxative than milk sugar. Lactose is not so readily broken down in the stomach. Maltose for normal children has some advantages. It may be partly absorbed as such; then too it is broken down, both in the stomach and the intestine and for these reasons it should be the one of choice but, if a diarrheal tendency exists, it is obvious for the same reason that we should not prescribe it as a matter of choice.

In some cases where a large amount of sugar is desired for any cause, it is advantageous to use a combination. This is true when we wish the child to make a rapid gain in weight as in case of athrepsia; and again the infant is very dependent on carbohydrates and it is especially advantageous for this reason, for him to take the normal amount as soon as possible. Again, the child derives a great amount of his energy from carbohydrates. The infant may exist for a time with a minimum of carbohydrates, but this is a great disadvantage to the child and, with a complete sugar intolerance, recovery is not likely to occur. In the normal child the tolerance for sugar is very high, while in the sick premature or eczematous child, sugar may be excreted even with a very small intake. This is usually in the form of lactose or galactose. The limit of tolerance for lactose and saccharose is about the same, while that for maltose is higher, probably due to the fact that it can be burned after passing the intestinal wall. For the normal child, either one of the above mentioned sugars may be used with comparative safety but, if digestive disturbances occur, it is better to withdraw all carbohydrates.

THE SALTS:—Sodium and potassium are respectively five and two and one-half times greater in cow's milk than in woman's, though the salts of woman's milk are in excess of the requirements of the child with the exception of iron, which is just sufficient in woman's milk, while in cow's milk the supply is insufficient. To meet this deficiency, the artificially fed child draws on its reserve supply in the liver until this has become exhausted. Then there is liable to develop a so-called "Milk Anemia," provided the proper amount of iron is not furnished in some other food. The fact

that cow's milk contains a greater amount of salts is of no advantage to the child, as the absorption of calcium from cow's milk is not so good as from mother's milk. The excess is principally eliminated through the digestive tract.

THE VITAMINES:—Besides the proteins, sugar, fat and salts of milk, there is a substance of unknown chemical nature named by Funk "Vitamines." There is a difference of opinion as to the number of these substances. There are two called by McCallum, fat soluble A and water soluble B. The lack of the fat soluble A causes xerophthalmia. The lack of the water soluble B will produce the condition known as beriberi.

1100 Church Street.

A FEW FUNDAMENTAL FACTS.*

By CYRUS THOMPSON, M. D., Jacksonville, N. C.

A month ago when the the Secretary asked me for the subject of the President's address, I replied to him that I had neither address nor subject for one, and that if he must print a subject in the program he could allow me the latitude of "A Few Fundamental Facts," a very wise because safe provision in a state of unpreparedness, since under that caption I might find abundant grazing in many fields.

The few fundamental facts to which, however, I am proceeding to direct your attention are sociological rather than medical; and for this predicament in a time of world-wide unrest and civil turbulence I am in no mood to apologize to an audience of men who are primarily foremost citizens and after that followers of one particular vocation. For what should interest the thoughtful in any calling more than men and communities of men and how they live their lives together? Nothing interests me more than human governments and the varying civilizations founded upon them. Considering man in his natural state, nothing seems to me more wonderful than orderly government and progressive society. Until these last few years, we unconsciously accepted these as matters of course. It never occurred to us that we might not be on an unbreakable upgrade of social progress to something higher than the world had ever known. Without being pessimistic, we now confess that we do not know how much of social ill, how much of

degeneration and decay, the few years ahead may hold in cover for us. We may reasonably wonder if civilizations after all, like every other organic thing, do go through a definite cycle of being, and have their youth and prime and maturity, their old age and decay. This course is the natural history of men, units of civil life, cells as it were of the civil body. We live our time and make our contribution to our generation and then we die. The mortal unit lives immortal only in the undying race. Does the civil body at last fail of rejuvenation, grow old and die as these mortal units?

To this question, History answers yes—the history of Egypt and Assyria, of Athens and Rome, and of every uncovered dead field of the world; while Prophecy bright-eyed, unable thus far to gainsay it, but full of faith, nevertheless, looks smiling into the future and declares that it shall not always be so. If the sequence of this social cycle be accepted as hitherto a fundamental fact, the physician, given all his life to asking questions and seeking causes and applying remedies, should be the first to ask the reason why. In the face of dead civilizations it is up to him to inquire and to assign the cause of death.

That adopted German now hibernating in neutral Holland doubtless believes that the saving culture of successive increasing civilizations went the way of all the earth because of the ungodly uprising of the democratic herd against divinely constituted authority and order; the democratic peoples of the world, on the contrary, would assign autocracy with its syndrome as the fatal malady; a neutral, doubting, might shake his head and ask, "Is democracy all bad and autocracy all good,—is autocracy all bad and democracy all good?"

Perhaps we have believed that democracy is all good and that what the world and our civilization needs for perfection is more and fuller democracy. We have desired and striven against autocracy to "make the world safe for democracy." When we have overthrown autocracy and made the world safe for democracy, we are now confronted with the larger task of making democracy safe for the world. In relation to the problem of human progress, no fact is more fundamental than this, and he is not wise who fails to face and consider it.

For no betterment or progress is possible except on the foundation of intelligence. Are

*President's address before Seaboard Medical Association of Virginia and North Carolina, at Elizabeth City, N. C., December 7, 1920.

the masses in any land intelligent enough to preserve the best that they have and to build on it something better? Turn the world over to them and what will they do with it? If the masses had the head, have they the necessary heart also? The masses of men think of the things of today, not the things of tomorrow. Progress is born of foresight and civilization proceeds out of the few with head and heart, who, not unmindful of today, set their gaze in the face of the coming time. These are the men who must lead the masses, save the world, and lift up the race from generation to generation. And the world, for the sake of the masses, must be made safe for them. These few save the world; for salvation is not a question of governmental form or numbers in power—salvation is a question of horizon.

Clamorous for power and assertive of rights, what do the masses know of duty and obligation, what of making straight the long way ahead? They confess their unfitness for rule in their adoration of leaders—without whose guiding hand they are as sheep without a shepherd. And in any democracy, whatever of freedom is obtained and preserved for men, whatever of progressive development is attained by them, comes not of themselves but of the few philanthropic souls who have vision and follow ideals, men who can let go the immediate and labor and wait for the ultimate good. These are men who are not content only to make a living, but must needs learn how to live themselves and to teach and lift up the race of men with them. They are men of faith and hope and charity, who, equating with their environment, clutch the hem of the garment of the highest; intelligent of head and benign of heart, they take care of themselves and set the lower upon a higher plane. They advance civilization in the logical process of human evolution. For we must conceive of social progress as of evolution in every organism: it is made only as the higher faculties gain control and direction of the lower.

This statement we may claim as another of our fundamental facts. If proof were needed, let me ask what great popular good has come about in any other way? Tell me the origin of our great charitable institutions for the blind and the deaf and dumb and the insane. The multitudes did not father them. Virginia and

North Carolina began some provision for the care of the feeble-minded only at the instance of this Society. Whence originated our system of public education, without which democracy would be a pitiable farce if it were not a cruel tragedy? And whence the medical inspection and care of school children, the democratic rulers of on-coming generations; and, indeed, our whole system of public health work and preventive medicine? These last are not wholly acquiesced in by all medical men even now; for candor compels me even in my mood of professional self-gratulation to admit that not all doctors have horizons beyond pay-day: and some ask of every advance, "How will this affect me in dollars," to say nothing of cents? It was Cain who scowled in the face of the Infinite and snarled, "Am I my brother's keeper?" The progeny of Cain are selfish, but not wisely so. They feel nothing of sentiment and know nothing of the joy of service. The alabaster box of ointment could always be sold for three hundred pence and given to the poor, say those who fall under the supremacy of their lowest powers.

If democracy is to be safe for the world, it must be safe for the best and highest, the most efficient in it; it must be a strong and intelligent democracy; and every wise man of today must endeavor to make it increasingly so for tomorrow. For efficiency and intelligence, like Juno's swans, wherever they go, go coupled and inseparable.

The mental unfitness of the masses to rule is the discovery of medical men. Oh! the politicians knew it, of course, and statesmen knew it; but the politicians said nothing about it. And what can a statesman say in the face of a politician? Fit and unfit are voters, and the politician, a man of short horizon, looks only for votes on election day. Getting these, his aim is attained and he is satisfied. If one-third of the drafted men were found physically and mentally unfit for military service, forty-five per cent. of 1,700,000 men accepted by the Local Boards and sent to the camps were found to be below the average in mentality,—in intelligence as distinguished from mere knowledge. In other words, if a man's intelligence is mature at eighteen or nineteen years of age, four and one-half per cent. were of normal grade; nine per cent. were of the mental age of sixteen or seventeen; sixteen and one-half per cent. were of the age of fifteen;

and twenty-five per cent. corresponded to the normal thirteen and fourteen year intelligence; and forty-five per cent. were of the ten to twelve year grade. The high officers had to come from four or five per cent. of the men, and the highest thirty per cent must furnish all commissioned officers for the conduct of the war, while seventy per cent. of the men furnished some non-commissioned officers and made up the private ranks. These Army Ratings by medical men give us a fair comprehension of the intelligence of the mass of democratic American men. America saved civilization, they say, and covered herself with imperishable glory—that the world may be ruled by the like of these.

You may not, however, practice medicine or surgery or pharmacy or dentistry, or law, or teach school, or run an engine, or pilot a boat on a river, until you have given reasonable evidence of your fitness for the work. But if you are twenty-one years of age, male or female now, you are not only permitted but earnestly besought biennially to set your hand to and tinker with the most complex and necessary engine of all with the freedom of a master engineer—because it has been declared that all men are created free and equal—then why should we discriminate?—and that they have an inalienable right to life, liberty and the pursuit of happiness; and that all just powers of government are derived from the consent of the governed. It was Elbert Hubbard, poor Philistine, who said “T’ ell with your wheel-barrow; what do you know about machinery?”

Perhaps it would be a little brash to say that these time-honored Jeffersonisms are not fundamental facts. I suspect, however, it would be only formal for me to hold them as such without reservations and interpretations. To the extent that no man may be another man's slave but may enjoy the fruit of his own labor, we may say that all men are created free; and they are equal in that there may be no discrimination in punishments imposed or burdens to be borne. All men have right to life, liberty and the pursuit of happiness only upon very severe conditions. These rights are inalienable only when exercised and enjoyed in the promotion of the common good. The individual may not always pursue happiness in his own way. The State is greater than the individual, and may for its welfare take away

life and deprive of liberty and define in what manner happiness shall be pursued.

The just powers of government should be founded on the consent of the governed when one nation seeks to govern another. But the just powers of government are hardly derived from the consent of the governed when the governed are individuals in a governing nation. Notwithstanding this hoary declaration, we now govern the Philippines; and the contrary doctrine was established over fifty years ago in the face of sovereign American States. We are far enough removed from the War between the States to see the wisdom of an undivided America and be proud of an indissoluble union. Society has the right to protect itself; no so-called personal right can prevail before social well-being. The State is greater than the individual and the greater will take precedence of the less. Society has the right, furthermore, not only to protect itself for the present, but to take present action for its further development.

That form of government is best for a man which is best suited to develop the best possible in him. That social order is best which fits most men to live on a higher level. Any form is valuable in proportion to its adequacy to broaden and deepen men's lives, to build in them character, courage and helpful efficiency.

I cannot get rid of the notion as a fundamental fact that the government of the family, when fortunately such government exists, is the type of all just government. The purpose of government is the protection, development and welfare of the governed, who are unable to protect themselves, to perfect their development and make secure their own well-being. The consent of the children is not asked by the parents, and the immature are not consulted as to what shall be done. Authority is not derived from the children but inheres in the head of the family because of them. The exercise of authority is the just expression of parental obligation. The just powers of government, therefore, are derived not from the consent of the immature and incapable who are governed, but arise out of the obligation which the philanthropic greater inalienably owes to the less for the protection of himself and the protection and development of the less up to his own higher level. Following this line,

I see that the world should be made safe for democracy, and that democracy could eventually be made safe for the world.

Imagine, on the contrary, a family wherein the parents are so democratic (and there are too many such) that there is no government until the children first consent to be governed, and where every policy to be pursued in the household or thing to be done is decided by vote of the family electorate, the vote of the youngest counting one as the vote of the maturest or the heads of the household. You no sooner see the picture thus limned than you exclaim, "What fools!" It is the picture of a democracy of free and equal citizens of all mental grades, the just powers of government being derived from the consent of the governed. For the masses of men are but children, incapable of self-guidance and protection and development into the full stature of men. They are incapable of defense in time of war, and they are not more capable of growth in time of peace. Is even the average man capable? What then of the lower? And there are as many below the average as above it; what of the forty-five per cent. below? They count as fully as those above it. The seventy millions are more than the thirty millions. The eighty-six millions are more than the fourteen millions. Shall the government be turned over in the name of democracy to the less intelligent because of their numbers, or guided by the few because of their intelligence and their ability to care for both the wise and the foolish?

There is enough of intelligence in every nation to save it if the intelligent were in control. But everywhere, and increasingly so, in this turbulent world, the power is with the numbers. The masses are taking things in their own hands the world over. What use will they make of their numerical strength? The answer to that question will depend upon the character of the men who lead them. For they will have leaders. The most democratic government in the world must needs express itself as an aristocracy. Whatever the character of the leaders whom the masses choose, the intelligence of the leaders will be higher than their own. For the lower intelligence always looks up to and follows a higher. A king among the blind must be at least a one-eyed man. And the leaders of whatever sort will have the confidence and so the control of their followers.

But how can confidence in leadership be inspired in these unintelligent but yearning democratic masses? Not by superior intelligence alone, but by superior intelligence coupled with humanity. The safe and efficient leader must have the wisdom of the father with the love of the mother. Having these, he would control, direct and lift up to safety the turbulent adolescence of this vast human family. Selfish leadership may come, but it betrays itself and is short-lived; an unselfish leadership declares itself in the character of its purpose, the beneficence of its results, and the length of its peaceful days.

What, especially in a time like this, therefore, is the prime business, the plain duty, the bounden obligation of the four millions, the fourteen millions of our American population? Is it to count the world and the fullness of it their own, and all God's children as made but for them? To plunder and pillage and profiteer as fools? For a little while they may lay up "much goods for many years," but their souls cannot take their ease, and eat and drink and be merry for long. Not now—It was a blind Samson who said "Let me die with the Philistines! And he bowed himself with all his might: And the house fell upon the lords and upon all the people that were therein."

"In all ages," it has been said, "the man whose determinations are swayed by reference to the most distant end has been held to possess the highest intelligence. The tramp who lives from hour to hour; the Bohemian whose engagements are from day to day; the bachelor who builds for a single life; the father who acts for another generation; the patriot who thinks of a whole community and many generations; and finally the philosopher and saint whose cares are for humanity and eternity—these range themselves in an unbroken hierarchy."

The plain duty, the prime business, the bounden obligation of the most intelligent in the nation is to take control of the less intelligent, to gain their confidence through a busy manifestation of that sublime quality of human service which in these later years in some degree has been evidenced in so many ways. This is their reasonable service. It is the exemplification of a very old formula, not time-worn, but eternal as the ages. They may so make the world safe for democracy and democracy safe for themselves and the world.

For the divine purpose hitherto manifest in the progress of human evolution must be the betterment of the condition of the masses of men, the making of a race of happier and nobler men. In their human sense, this fundamental fact lies deep as a racial conviction. This conviction may be appealed to and directed, but it cannot be swept aside or obscured. It must be wisely and humanely met. For whatever your views may be, men must be dealt with as they are and not as you would have them. This fact is fundamental. If society, therefore, is not what it should be, if orderly government and civilization are in danger, the fault lies not with the masses struggling blindly toward the day, but with you and me,—if you and I are on the higher plane.

I love to think of the doctor as the most self-sacrificing, the most humane, the most serviceable and, therefore, the most intelligent man in his community—full of reasonableness, public spirit, and sweet charity; for which reason I make no apology for the scope of this brief address.

A STATISTICAL REPORT ON THE INCIDENCE OF CONGENITAL SYPHILIS.*

By LAWRENCE T. ROYSTER, M. D., Norfolk, Va.

In January, 1919, the King's Daughters' Children's Clinic began taking a routine Wassermann of all children who were brought to the clinic for treatment of any kind. The Wassermans were made by three different laboratories, but a large majority were made in one laboratory, by one person†.

The object of this paper is to make a statistical report of the first thousand Wassermans taken.

TABLE I. RACE INCIDENCE.

Colored	659
White	341
Total	1,000

TABLE II. PERCENTAGES.

Positive, 125.
Percentage of positives, 12.5.
Colored positives 101, or 15.47%.
White positives 24, or 7.04%.

*Read by title before the fifty-first annual meeting of the Medical Society of Virginia, in Petersburg, October 26-29, 1920.

†The Wassermans were by Dr. Mary E. Roche, Mrs. Maude Manson and Mr. H. G. Parker, the last of the Board of Health laboratory, who made most of the tests.

I am indebted to Miss Mabel Wing for the keeping of the records of this series.

TABLE III. AGES.

Youngest	1 mo.
Oldest	15 yrs.
Under 12 mos.....	35
1 to 5 yrs.....	15
5 yrs. and up.....	75

TABLE IV. PRESENTING CAUSE.

Swollen knee	1	Swollen cheek	1
Injuries	3	Nausea	1
Circumcision	1	Sore mouth	1
Skin eruptions	5	Glands of neck.....	1
Poor School work.	2	Syphilis	1
Delinquency	2	Inflamed eyes	1
Pain in chest & back.	1	Painful micturition.	1
Enuresis	1	Discharging ear ...	1
Indigestion	1	Defective vision ...	7
General examination	7	Sore throat	6
Headache	5	Abscessed ankle ...	1
Ear ache	1	Whooping cough ..	1
Adenoids & tonsils	37	Feeding	42

This makes a total of 132, whereas, there were actually only 125 positive cases. The discrepancy of 7 is accounted for by the fact that where a child presented two conditions which did not appear to have any definite relation to each other, or to a common cause, they were tabulated separately.

TABLE V. CONDITION ON ADMISSION.

Of the 35 under 12 mos. the condition on admission as described by the examining physician was as follows:

Good	7	Poor.....	18
Fair	6	Wretched.....	4

Of the 90 over 1 year the condition was described as:

Good	27	Poor.....	26
Fair	34	Wretched.....	3

DISCUSSION.

THE CLINIC is situated in Norfolk, a typical mid-southern city, with a population of 115,777 (not including suburbs) of which 75,256 or 65% are white and 40,521 or 35% are negroes. The city has a rather large foreign population. The Clinic draws from the city proper and a large circumjacent territory, and has affiliations with various other philanthropic bodies, which refer cases needing special attention. Among these may be mentioned: The Juvenile Court, for whom we make mental examinations; The Society for the Prevention of Cruelty to Children and Children's Aid; The Colored Day Nursery, for whom we direct the feeding of infants whose mothers are compelled to work, while many school children are referred by the medical inspectors and school nurses.

The attendance during 1919, including new cases and returns, was approximately 5,000,

while for the first eight months of 1920 there has been an average attendance of 600 per month.

RACE INCIDENCE.—Among physicians of the South there is a popular classification of negroes as regards syphilis to wit: "Those who have or those who will have." This study has shown at least that the incidence of syphilis among negroes is about twice as great as among the whites, certainly as far as congenital infection is concerned.

CAUSE OF PRESENTATION.—Merely as a matter of interesting detail a record was kept of the reason assigned by the parent or guardian for bringing each child to the clinic. A large number of these will be seen at a glance to bear no relation whatever to syphilis, while others are just as apparently of syphilitic origin. All of the cases of "skin eruption" were non-syphilitic. The cases of poor school work and delinquency (referred by the Juvenile Court) were apparently definitely related to the luetic infection. Some of the cases of headache were refractive in origin, while others were relieved only by specific treatment. All of the cases of "defective vision" were keratitis or choroiditis. Most of the "feeding cases" had syphilis as the underlying cause of malnutrition, a number being on an ample supply of breast milk. A few were apparently perfectly healthy. Most of the adenoid and tonsil cases presented no evidence of lues.

PHYSICAL CONDITION.—As shown in Table V, the luetic infection is reflected in the physical condition on admission, many cases classed as "fair" or "poor" showing no evidence of syphilis other than a mal-nourished or under-developed state. Of the 27 classed as "good," in the second division of Table V, a majority were in cases of enlarged tonsils referred to the clinic by the school nurses as needing tonsillectomy. Of the 7 classed as "wretched," 6 were marantic infants, and one, a girl of 5 years who had both syphilis and tuberculosis.

CLINICAL.—Unfortunately, on account of an insufficient number of physicians and nurses to keep the records complete during a part of the time covered in this report, there were a number of errors made in recording certain complications and specific manifestations. It is, therefore, impossible to tabulate the incidence of special symptoms. A generalization must suffice. As a rule, in early infancy marked malnutrition or marasmus was most frequent-

ly observed. This was particularly the case in breast fed babies; in fact, in almost every case in which a baby on an ample supply of breast milk was markedly undernourished, syphilis was the cause. Frequently this was the only manifestation. The buttocks of some of the marantic infants were excoriated from irritating diarrheal stools. The spleen and liver were frequently enlarged, but not with a degree of constancy which might be expected in syphilitic infants. The cases of epiphysitis were invariably in well developed and well nourished infants.

The special manifestations in older children were usually keratitis or choroiditis. Not one case in this series presented evidence of neuro-syphilis. This is in striking contrast to the author's experience in private practice. There were four cases of typical Hutchinson's teeth; three were negroes and one white. Two presented the triad of deafness, keratitis and Hutchinson's teeth, while a third presented this triad with the addition of a "saddle" nose. There was not a single instance of "sabre" leg. Two cases of older boys exhibited such extreme ulceration as to lead to the suspicion of acquired lues.

TREATMENT.—Little can be said of the results of specific therapy at this time, since many of the cases are still under treatment. This will be made the subject of a subsequent report.

Taylor Building.

THE CARE AND TREATMENT OF PNEUMONIA.*

By F. C. RINKER, M. D., Norfolk, Va.

During the past few years and particularly during the epidemic of last year, there have been advances made in the treatment of pneumonia and I will endeavor to enumerate them as they have impressed me. I will avoid technicalities in so far as it is possible in order to make the methods used the more practical.

Pneumonia is due to infection of the lungs by the pneumococcus, streptococcus, or what we prefer to call the pneumococcus-streptococcus group. These organisms are commonly found in the nose and throat of healthy individuals and are prone to become virulent under certain circumstances.

The symptoms and physical signs of the dis-

* Read before the Southside Virginia Medical Society, at Victoria, Va.

ease are well known to us all. Death from pneumonia occurs as a result of circulatory failure which in turn is due to the existing toxemia or to dilatation of the right heart. The effects on the circulation are due to the pulmonary process.

The problem of treatment then may be divided into three parts:

1. The use of specific sera or specific drugs.
2. The care of the heart and circulation.
3. General measures directed toward the relief of toxemia.

SPECIFIC TREATMENT.—When sera were first being used for the treatment of infections and when tetanus and diphtheria fell under the ban of anti-toxic sera, it was hoped that pneumonia would be a close second in response to a specific serum. This hope was not realized until recently and then only in part. Within the past few years Cole has put the serum treatment of pneumonia on what seems to be the beginning of a sound basis. Unfortunately, the process and methods proposed by him are too cumbersome to be carried out without the aid of a well equipped and well run laboratory.

The following is a brief abstract of the method recommended by Cole: "In the first place, pneumonia as diagnosed by the clinician is not the result of an infection due to identical micro-organisms. It has been discovered that pneumococci can be divided into two groups which have different characteristics; then again about five per cent. of the cases diagnosed as pneumonia are due to some other form of infection, such as the staphylococcus, streptococcus or Friedlaender bacillus. In order to identify the different groups of pneumococci the following method is used:

A small specimen of the sputum from the pneumonia patient is injected into the peritoneal cavity of a mouse. After the micro-organisms have developed, the peritoneal cavity is washed out with salt solution and the washing is centrifuged to remove cells and leucocytes. To a small portion of the suspension immune sera of types 1 and 2 are added. If agglutination occurs in either mixture we then know that we are dealing with the type of micro-organism corresponding to that particular serum. If no agglutination occurs, we are then dealing with either types 3 or 4.

Cole has found that pneumococci group themselves into four types according to

morphological and microscopical peculiarities, of which types one and two produce in animals a protective serum and types three and four do not. Unfortunately, type three has the highest mortality, it being forty-five per cent. Type one has a mortality of twenty-five per cent., type two twenty-nine per cent., and type four twelve per cent.

The serum treatment of type one has resulted in lowering the mortality of this group from twenty-five per cent. to eight per cent.

The serum for groups one and two are prepared from horses and can be obtained from the various houses which prepare sera.

The work of Cole is an advance, though only a small step, and should be put to use wherever it is possible. The work in itself is an argument in favor of our State Board laboratories being equipped so that they may give, in the shortest possible time, a grouping report on cases of pneumonia. All other sera used in the treatment of pneumonia have proven fruitless from the standpoint of specific treatment.

A large number of our pneumonia cases fall into groups three and four; for these we have no specific sera, and are, therefore, forced to fall back on the **NON-SPECIFIC TREATMENT** of which the care of the heart and circulation is most important. After a diagnosis of pneumonia has been made, the clinician's attention should at once be directed toward the patient's heart and circulation. The heart muscle is weakened by the toxemia resulting from infection and it has an increased amount of work to perform against increased resistance.

The objective findings indicating a failure of circulation are as follows:

1st:—Diminution in the intensity of the second pulmonic sound. (Remember the second pulmonic sound is normally accentuated in pneumonia and its character should be noted at every visit by the attending physician.) Whenever the intensity of this sound becomes weak, we should be on the lookout for cardiac dilatation and stimulation should be increased at once.

2nd:—Relation between the systolic blood pressure and the pulse rate. Every physician should keep a record daily of the systolic blood pressure and note its relation to the pulse rate. Normally, the systolic pressure estimated in m.m. of mercury is greater in

number than the rate of the pulse. If the pressure should drop so that the pulse rate would be equal or greater than the systolic pressure, it would be an indication of failing circulation. This is the so-called Gibson rule.

3rd:—Irregularity and weakness of the pulse are indications of increased cardiac weakness.

4th:—Dilatation of the heart. No patient suffering from pneumonia should be treated without daily observation of the size of the heart with particular attention being paid to the right heart. This is easily done by a percussion which is an accurate method. Dilatation of the right heart is the most dreaded of all complications of pneumonia, for so long as the right heart performs her work, just so long will the patient live.

The methods and medicinal aids of meeting these symptoms of cardiac weakness will be enumerated later. Let me say here that it is my belief that many deaths from pneumonia have resulted because of failure to recognize these four cardinal signs of circulatory decompensation early enough.

This brings us to the question of GENERAL CARE AND TREATMENT, which in my opinion should be carried out as follows:

1st:—Fresh air. Not necessarily cold air, but air which is being constantly changed. It is advantageous to have a draught of air passing over the patient's face. A pneumonia patient has increase in respiration and, unless the air is being constantly changed in the direct vicinity of the nose and mouth, he is liable to re-breathe a portion of his exhaled, deoxygenated and infected air. The patient should, of course, be protected with clothing so that he will not become chilled. Fresh air allows a greater amount of oxygen to be used in the same space of time; it also tends to keep the mucous membrane of the nose and throat in a healthier condition. This brings us to the question of:—

2nd:—The care of the nose and throat. Pneumonia is probably a secondary infection resulting from a blood metastasis from infection in the nose and throat. Therefore, to keep the nose and throat in a healthy condition will certainly lessen toxemia and severity. In all cases it is beneficial to clean out the nares daily and, if necessary, shrink the turbinates with one per cent. cocaine solution in order to pro-

mote free drainage from the middle meati. Then have the nurse put two per cent. calomel in vaseline into each nostril three times daily.

3rd:—Relief of nervous symptoms. Low muttering delirium and rapid pulse are severe and annoying symptoms and call for prompt and vigorous treatment. Here, fresh air, tepid sponges and packs with mustard are helpful. In addition to these methods the use of morphine is indicated. Morphine may and should be used freely in these cases. It relieves the nervousness and it is beneficial to the circulation through its stimulating effect on the vagus nerve. It should be fortified with either atropine or strychnine in order to counteract the depressing effect upon respiration.

4th:—The intestinal tract. The bowels should be moved once daily by either enema or laxative. Abdominal distention is the result of the effects of toxemia on smooth muscle of the intestinal wall resulting in loss of muscle tone. This symptom is troublesome and embarrasses respiration. The most useful drugs to be used in combating abdominal distention are pituitrin given 1 c.c. doses by hypodermic injection or the salicylate of eserine used hypodermatically, grains 1/24. Turpentine stupes are helpful. A rectal tube may also be used, but is very disturbing to the patient as a rule.

Dilatation of the stomach is a more frequent complication of pneumonia than is supposed. It occurs late in the disease or just following a crisis. There is great distention of the abdomen in the epigastric region, the patient vomits large amounts of foul smelling material. The treatment is gastric lavage after which the patient should be placed on his right side; the fluid intake should be curtailed decidedly and eserine salicylate, grains 1/24, should be given hypodermically. The frequency of lavage depends upon the relief of symptoms. The condition usually disappears in a short time if treatment is instituted early.

5th:—The kidneys are put on heavy strain during pneumonia infection and should be watched very closely. Daily examination of the urine for albumen, blood and casts, should be done. In addition, have the nurse or a member of the family measure all of the fluids taken in by the patient every 24 hours and measure the twenty-four hour urine output. It is obvious that if the excretion of urine falls

below the amount of fluids ingested in 24 hours there must be some interference with kidney function, or there has been a sudden drop in blood pressure. When such a condition is noted, active catharsis and diaphoresis are indicated.

6th:—Blood letting should be done where there are evidences of a dilated right heart.

In conclusion, let me call attention to the uses of efficient DRUGS in the treatment of pneumonia. Do not use your ammunition until the condition of the patient calls for its use. Many a case of pneumonia recovers without the use of any medication whatever.

1st:—Digitalis. This drug is probably the most useful single drug in pneumonia, and may be begun early in the disease in order to give additional cardiac support. Recent authorities advise using a good tincture in moderate doses, using ten minims three times in the twenty-four hours. The dose may be increased in cases showing signs of cardiac failure. Or it may be given intravenously in cases which show signs of sudden collapse, with increased heart rate.

2nd:—Caffeine. The sodium benzoate given in two or three grain doses by hypodermic injection or by mouth every six to three hours is of value in cases of cardiac and respiratory embarrassment.

3rd:—Camphor in oil given in three grain doses hypodermically every three to one hours is probably the most valuable drug in cases of sudden circulatory failure. It is also useful in cases of gastric dilatation and in severe cases of hiccough.

4th:—Morphine should be used in all cases of restlessness and rapid pulse rate.

5th:—Atropine is of value especially in cases suffering from edema of the lungs and in cases of respiratory embarrassment. It is also of value in cases of hiccough.

6th:—Eserin salicylate and pituitrin are useful in gastro-intestinal symptoms.

7th:—Alcohol, I mention to condemn. In my opinion it has no place in the routine treatment of pneumonia, but should be used in cases of habitual users. The effects of alcohol on the heart are depressing and not stimulating.

8th:—Sodium-bicarbonate, if given in doses of grains 15 to 20 every four hours, will assist

in combating infection and preventing acidosis.

Finally, constant watchfulness is most necessary in all cases of pneumonia. If possible, a trained nurse should be in attendance; a sudden delirium or a rapidly occurring cardiac failure may go on to the stage of danger if there is no one there to report these changes to the physician. The attending physician should visit the patient at least twice daily, whenever practical, and at each visit he should note the character of the second pulmonic sound, the character of the pulse, the size of the heart, the systolic blood pressure and the condition of the kidneys.

Sarah Leigh Clinic.

VALUE OF AUTOPSIES WITH REPORT OF CASES.*

By K. D. GRAVES, M. D., Roanoke, Va.

Although to the lay mind the idea of an autopsy is usually abhorrent and repulsive, still autopsies are the basis of most of our medical knowledge today.

Ever since the day of Hippocrates, the constant desire of men in the medical profession has been for more knowledge as to the cause and course of disease. Not until fairly recently, however, has even limited opportunity been given to study the body after death. Many factors have entered into this state of affairs—first religious, then legal, and later, purely sentimental.

Autopsies may be obtained in three ways—by medico-legal means, by coercion, and by education of the public. The first is sometimes necessary, the second is practically never justified. The great need is for education of the public along this line. They must be taught that the body is merely the shell, the cocoon, of the real self; and that as the butterfly emerges from the cocoon, leaving only the crumpled shell behind, so the dead body represents in no way the real person.

Probably the most progressive step in this direction has been taken by the Health Department in asking the question on their death certificates, "Was an autopsy performed?" As soon as the general public realizes that broadly speaking, one of the best ways to learn the disease processes is to study them on the au-

*Read at the fifty-first annual meeting of the Medical Society of Virginia in Petersburg, October 26-29, 1920.

topsy table, the sooner universal autopsies will be granted. It is not necessary to be able to study the minute microscopic changes which take place in disease in order to perform an autopsy although this, of course, is of great advantage; the general practitioner, with a few simple instruments, can make observations and learn from the gross tissue changes facts which are bound to be useful to him in his work.

The words of the Great Teacher, "Seek and ye shall find," apply not only to what we are looking for, but oftentimes to the unexpected as well. To illustrate this point, I wish to report briefly, two cases.

Case 1.—Mrs. J. F. K., white, female, 28, married, the mother of three children. Started having headaches about December 27, which became very severe at times, especially in right occipital and mastoid region. Ear drum was punctured by her physician January 7, but no pus was found; however, ear started discharging freely two days later. On February 9 a spinal puncture was made for diagnostic purposes, the blood Wassermann having showed a doubtfully positive reaction. Fluid under marked pressure, cell count 160, globulin increased, and fluid gave a positive Wassermann reaction. X-ray examination showed marked increased density and cloudiness of right mastoid. Patient grew progressively worse, and died February 17. The diagnosis lay between cerebrospinal syphilis and brain abscess.

Autopsy revealed numerous subarachnoid pockets of pus containing hemolytic streptococci located in the horizontal fissure of Sylvius, both sides, fissure of Rolando, left side, anterior portion of temporal lobe left side, and in the region of the pituitary and infundibulum. Small amount of reddish serosanguineous fluid in right mastoid. Probable cause of death: Acute streptococcic meningitis with multiple brain abscesses; probably secondary to infection of right ear.

Case 2.—Mrs. M. J. A., white, female, age 58. Trouble began two years before admission to hospital, with flu. Had not been well since that time. Suffered with shortness of breath, dizziness, and swelling of feet and ankles, gradually growing weaker. In bed for last seven weeks. Patient was markedly emaciated, slight generalized venous engorgement. Heart: apex markedly diffuse, and having maximum impulse $1\frac{1}{2}$ inches to right of right nipple, in 5th interspace. Left border of

heart not determined. Presystolic thrill at apex. Action rapid but regular. Lungs: left, flatness, and absence of breath sounds and fremitus over entire left lung, except tubular breathing at extreme left apex. Right lung negative. Patient had been diagnosed T. B. of left lung, and had spent some time in Colorado prior to admission to the hospital. Diagnostic aspiration of chest showed brownish fluid; 30 c.c. was withdrawn and patient died on table from collapse.

Autopsy showed the left pleural cavity filled with brownish fluid, the lung being compressed to the extreme right of the apex, lying against the heart and pulmonary vessels, so misshapen as to be hardly recognizable, it being almost tubular in shape, about 3 cm. in diameter and 12 cm. in length. Diagnosis non-tubercular pleurisy with effusion following flu.

In conclusion, beg to say that in my judgment the need for educating the public regarding autopsies is very great, and the responsibility for this work lies chiefly with the family physician. If he lives up to this responsibility, great good will be accomplished, and many lives saved.

Medical Education

THE UNDERGRADUATE CURRICULUM.*

By FRANK BILLINGS, M. D., Chicago, Ill.

The character of the reports made yesterday and today by committees representing the fundamental and the clinical branches upon the principles and policies which should be followed in undergraduate and in graduate medical training, indicates the need of a decided modification in the curriculum of the medical school.

Specialism in the teaching of and in the practice of medicine has been permitted to warp our judgment and to divert us from the proper course to pursue in the attempt to educate and train the student of medicine.

There are not a sufficient number of efficiently trained general practitioners or of adequately trained specialists to meet the public need. We are all practically in agreement that primarily the student should be educated broadly and comprehensively so that he may

*Read at the annual conference on Medical Education, Licensure, Hospitals and Public Health, March 8, 1921.

be qualified to practice general medicine. If he is desirous of becoming an internist, a general surgeon or a specialist in one of the narrower fields of practice, he must have adequate postgraduate medical training to qualify him for the work.

Therefore, the chief product of the medical school should be the graduation of resourceful, broadly educated and well trained practitioners of medicine.

We may arrive at a better conception of what the education of the general practitioner should be if we consider what are the obligations and responsibilities of the general practitioner to the community he serves. In practice he is a family physician and in this, his chief role, he is responsible for the safe and sane treatment of the family in illness and injury. He counsels and advises the family upon all problems which confront it in relation to individual and general hygiene, public sanitation, education and community obligations and responsibilities. He must have a good general knowledge of the principles relating to epidemiology, immunology, sanitation, medical jurisprudence and sociology that he may act rationally when confronted with the problems which relate to the application of tried and proved measures of disease prevention for the protection and welfare of the multiplied families—the community for whom he is responsible. He must advise, guide and safeguard the expectant mother through gestation. He must so manage the labor that it will terminate within a reasonable time without instrumental interference and without serious injury to the mother and child. He must be able, when necessary, to meet the not frequent obstetrical emergencies and especially to recognize the serious complications at an early stage of labor so that consultation may be secured if he is not technically able to fully safeguard the two lives for which he has assumed responsibility. He must be able to give the best advice and management in the care of infants and children. This implies a knowledge of the underlying principles and also the actual personal contact and personal experience in a modern infant and child welfare clinic in a medical school training. He must understand the principles of psychology and of neuropsychiatry to enable him to recognize mental abnormalities in childhood and in adult life. For these mental conditions and their manage-

ment and treatment he will usually not assume responsibility, but will direct the related responsible individuals to physicians qualified in this work. He must be a well trained diagnostician and generally able to recognize existing morbid tissue changes and the related abnormal functions. He should be able to trace the beginning of the pathological changes and have a reasonable comprehension of the ultimate result. He should know what management and treatment to give. He should have command of a selected few tested and tried pharmacological products which he may use with skill and usually with great benefit to the patient. His knowledge of the principles of immunology and bacteriology will enable him to apply recognized specific serums and a few antigenic vaccines with judgment and skill therapeutically and prophylactically. He will utilize in the general management of his patients rest, a proper environment and, so far as available, physical treatment. He may easily command hydro, thermo and occupational therapy and, in some communities, electro and massotherapy. He will have a proper conception of the value of calisthenic and other active exercises in the restoration of the functions of the locomotor apparatus. He will understand asepsis and will perform minor and emergency operative surgery with confidence and ability. He will especially care for emergency surgery in the form of fractures of the bones and the uncomplicated joint dislocations. His knowledge will enable him to know his limitations in major surgery and to safeguard the life and health of his patients by reference to well qualified surgeons.

This statement of the functions of the general practitioner indicates the need of a broad academic education and mental training preliminary to the study of medicine. It is not necessary in this short paper that I should enumerate the various steps which should be taken in the medical training of the family practitioner. The inference is plain that he must have a good knowledge of general and physiologic chemistry, of human anatomy and physiology, of pharmacology, of general pathology with constant training through the four years of residence in morbid anatomy, of epidemiology, immunology and psychology. In the clinical branches he must have the training of his brain, special senses and hands in the recognition of disease. He must learn to use

the simple diagnostic aids in the form of instruments and laboratory tests. With this knowledge of the methods of diagnosis he must have constant and daily opportunity to study disease as expressed in the ambulatory and ward patients. He must have an opportunity to observe the etiological relations of occupations, environment, social conditions and other factors to disease. He must learn and recognize the importance of community as well as individual disease. He must have the opportunity to observe the results of medical treatment and management and the final condition of the patient after operative surgery. He must have an opportunity to witness minor surgical operations, emergency surgery, and especially to have practical training in the treatment of fractures of the bones and of dislocations. In the hospital he should have an opportunity for the practical study of dietetics and of dieto-therapy. He should have practical experience in the measures of disinfection in the sick room and especially in the control of communicable diseases. In the fifth or interne year, the major part of the training should be along the same lines as that of the third and fourth years in residence. The bright and energetic student will find opportunity to apply himself to elective investigatory work with much benefit to himself. But the large majority of the medical class will be fully engaged in this broad and necessary practical training.

Finally, it must be said that in addition to the educational qualifications, both academical and medical, the family physician must be a man of character. His daily life must be a practical expression of honesty, morality, and resourcefulness in service to his patients. He will have a due consideration of his own health and responsibilities and at proper periods will play as he works with well directed energy, giving and asking half the road and fair play.

1550 North State Parkway.

Public Health

In the T. B. Field.

HOOKWORM IN TUBERCULOSIS.

Incidence of hookworm and other intestinal parasites among patients of the State Sanatoria for treatment of tuberculosis gives rise

to interesting speculation as to the contributing factors in breakdown from tuberculosis infection. Feces examinations of patients at Catawba Sanatorium show an incidence of slightly less than 6 per cent of hookworm or other intestinal parasites.

A typical case was sent to one of the State tuberculosis sanatoria by her family physician. Physical examination disclosed fine and medium rales throughout the front of the chest, the rales being especially marked after the patient exhaled fully, immediately gave a slight cough, followed by a quick inspiration. Laboratory tests showed positive sputum, and examination of feces showed hookworm eggs. Other laboratory tests were negative. Stereoscopic films of the chest showed rather extensive involvement of both lungs, corresponding to the physical signs.

Thymol treatment for hookworm was given and the patient was started on the routine sanatorium treatment for her lung condition, with favorable response.

This case gave a history of apparent good health up to August, 1920, when influenza developed, with subsequent loss of weight and strength, cough and expectoration and other symptoms suggesting tuberculosis.

Is it not possible that in this case the presence of the intestinal parasite proved the determining factor between normal convalescence and development of active tuberculosis? As contributing toward lowered resistance and presenting favorable conditions for clinical tuberculosis, sanatorium experience seems to indicate that hookworm and malaria should be considered. Tests for these conditions are made free of charge by the State Board of Health. Laboratory records at State Sanatoria show many unsuspected cases would be found if tests were made. No one will question the statement that both hookworm and malaria lower the resistance of the individual in whom they are found and no one will deny that as a result of lowered resistance tuberculosis often develops in cases that would otherwise never break down. It is generally believed that most persons have a latent tuberculosis infection. This latent infection becomes active disease usually when some debilitating influence lowers the resistance of the individual, and thus makes the way easy for the advance of the tuberculosis germ.

CHESTERFIELD PUBLIC HEALTH.

Supervisors of Chesterfield County have unanimously voted an appropriation for continuing co-operative sanitary work in the county. This ensures the third year of the work in Chesterfield and establishes a precedent for the State. In addition to the sanitary work, which will be continued along the lines followed the past two years, a more ambitious public health program has just been inaugurated, principally through the local Red Cross. A health office has been opened in Chester, and will be used as headquarters for the sanitary demonstrator, the county nurse and her assistants, the county home demonstration agent and the Red Cross. This centralizes virtually all health activities of the county.

BILATERAL INDUCED PNEUMOTHORAX.

A report on bilateral successive pneumothorax (R. Burnand, *Bulletins de la Societe Medicale des Hopitaux, Paris*) summarized in *Journal of the American Medical Association* for March 5, 1921, is interesting. Burnand found that the compressed lung, after three years of artificial pneumothorax, expanded practically normally, resuming its functions. Usually it is difficult to determine when it is indicated to suspend administration of artificial pneumothorax. The case reported in the French journal showed, after five months, such disturbance in the other lung that a pneumothorax was induced on the other side. Conclusions drawn from other cases reported were that successively bilateral pneumothorax is contraindicated, except in very unusual circumstances.

B. L. T.

Laboratory of the State Board of Health.

The director of the laboratory has just returned from a conference of the laboratory directors of the Southern States, held in Atlanta. This conference was very practical and interesting and some of the matters discussed will be of interest to Virginia physicians.

It was unanimously agreed that urinalyses and blood counts were not public health matters and, therefore, not a proper part of the work of the Bureau of Health Laboratory, except perhaps, in the case of a clinic operated directly by the Board of Health. This has always been the policy of this laboratory but, nevertheless, we get frequent requests for such examinations.

Tissue examinations they felt should be available for persons unable to pay. The best method of handling these, however, was thought to be by the State Medical School. The pathological department of the Medical College of Virginia has already agreed to handle such specimens for us where the proper information comes with the specimen.

It was also agreed that the examination of feces for the tubercle bacillus was impracticable and not worth while.

The examination of ordinary vaginal smears for the gonococcus was also decided to be useless and it was agreed that such specimens should be reported as unsatisfactory and never as negative. We recommend taking specimens from the female as follows:—

“Douche the vaginal tract with sterile water or normal salt solution and cleanse the vulva, then (a) using a vaginal speculum obtain a smear directly from the external os, or (b) by expressing pus (?) from ducts of Bartholini glands and making smears, or (c) making smear directly from urethra, as in male.”

Judging from reports rabies is much worse in the other southern states than in Virginia. It is unfortunate indeed that the muzzling laws in this State are not enforced, for we have the opportunity to prevent this disease from ever becoming a serious problem with us. When once it gets a start thousands of dollars will be spent in an effort to control it, while now the problem would be much simpler.

AUBREY H. STRAUS, *Bacteriologist*.

Analyses, Selections, Etc.

Rural Jobs For Doctors.

Inhabitants of cities have no idea of the medical crisis which has developed in the rural districts not only of this State but throughout the country. The cities themselves, with the exception of New York and perhaps one or two other very large centers, are undermanned as respects doctors, but in many outlying regions there are no doctors at all, while in others there are only men well on in years, near the retiring age of 65 and ready to give up active practice.

The condition is general. Towns in Massachusetts have been offering bonuses to physicians to settle within their boundaries; one, the town of Otis in the Berkshires, proposes

to pay \$500 a year out of the public treasury if a doctor will locate there. Other places have offered to build a house for a settling doctor, to buy and keep an automobile for him or to guarantee him a certain income annually. In spite of all inducements, however, it is increasingly difficult to attract medical graduates to country practice, and the lack of protection against disease of large groups of farmers and their dependents grows more and more acute.

Conditions in this State (New York) have become so bad that the legislature is now called on to provide a remedy. Dr. Hermann M. Biggs of the State Health Department has devised a plan to furnish relief; it has been embodied in a bill introduced in both the Senate and Assembly at Albany which will be pressed for passage at the present session. The proposed system includes the erection of hospitals, clinics and laboratories in every county in the State, equipped with all the modern facilities for study of disease and treatment of patients. Not only will there be all the necessary instruments and apparatus but up to date doctors and graduate nurses will be attached to each. At the same time they will not be run in competition with private practitioners, but, on the contrary, will be thrown open to these. Any doctor may have their aid in diagnosis and treatment of his patients without expense, and any sick person going to them may choose his own doctor.

As matters stand this plan seems to be the only way of meeting a great public peril. Whole countrysides cannot be left without any refuge for the ill or injured. The problem of financing it is one which must be worked out.

Country doctoring is everywhere a thankless, unprogressive life in its present conditions. In creating hospital and dispensary places with pay a primary encouragement will be created by Dr. Biggs's plan. Further, the certainty of means for sincere, modern curative work and for keeping abreast with the progress of medical science will be a pull that will counterbalance many hardships in the minds of young men who combine some taste for the country with professional ambition.—*N. Y. Herald*, March 29, 1921.

Secretary's Announcement

Medical Society of Virginia, Lynchburg, October 18th-21st.

The next meeting of the Medical Society of Virginia promises to be one of the most interesting in the history of the society. The president, Dr. A. L. Gray, recently visited the Lynchburg and Campbell County Society and plans were suggested for a program of unusual merit and for giving the visiting physicians the time of their lives. Several innovations are contemplated—among them an "Oration on Medicine" by some distinguished visiting physician, a similar one on "Surgery," etc. It is planned to have one each day and it is probable that the meeting will be divided into sections so that the program may be held strictly to schedule. The Lynchburg physicians are anxious to have a large attendance and they are making plans to furnish real entertainment for those who are fortunate enough to get there.

The American Medical Association, Boston, June 6th-10th.

The meeting of the American Medical Association in Boston in June will tax heavily the transportation facilities from the South to that city. There is the ordinarily heavy travel north at that season which, coupled with the converging of nearly all of the southern railroads at Washington on the Pennsylvania and the Baltimore & Ohio, will make it difficult for Virginia physicians to get Pullman accommodations. Suitable facilities can be arranged if we can notify these railroads in advance as to approximately the number of members going. If you are planning to go notify your secretary. This will not be considered as binding but it will give the railroad officials an opportunity to make proper arrangements to take care of those who do go. Elsewhere in this issue your attention is called to the very attractive trip by boat from Norfolk to Boston. Physicians who want a real outing can get it on this trip—they should enjoy every minute of this delightful sea trip of thirty-six hours.

A little girl timidly asked the drug clerk for a package of pink dye.
"What do you want it for?" responded the clerk.
"Woolen or cotton goods?"
"Neither," said the child. "It's for ma's stomach. The doctor said she's have to diet, and she wants it a pretty color."—Selected.

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Editorial

Winchester Medical College.*

This, the first medical college in Virginia, was first chartered under the name of the "Medical School of the Valley of Virginia" in 1826. This school was inaugurated by two of the physicians in Winchester—Dr. John Esten Cooke and Dr. Hugh H. McGuire. There were only three professors in this school—Dr. Cooke teaching the Practice of Medicine and Obstetrics, Dr. McGuire, Anatomy, Physiology and Surgery, and Dr. A. F. Magill, Chemistry and Materia Medica. These three men, all men of decided ability, became very prominent in the profession in after years.

Doubtless, the beginning of this medical school was suggested by the successful law school of Judge Henry St. George Tucker, then in Winchester, which was organized in 1824 and had at this period about fifty students, many of them afterwards becoming eminent men.

Dr. John Esten Cooke had lived in Fauquier County, Virginia, but in 1821 moved to Winchester. He had a great reputation as a practitioner and had a large and successful practice in Winchester. In about 1829 he removed to Lexington, Kentucky, becoming there Professor of the Practice of Medicine in the Trans-

sylvania University. He was a medical writer of note, his principal book being a treatise on Pathology and Therapeutics. He was also a large contributor to the medical journals of that time.

Dr. Hugh H. McGuire, who came from a distinguished Irish family, was born in Winchester in 1801, his grandfather having removed from the County of Fermanagh, Ireland, to Winchester, in 1754. He was led to study medicine by a visit of the eminent surgeon, Dr. Physick, who came to Winchester on horseback from Philadelphia to operate for stone in the bladder upon an uncle of young McGuire. The latter returned to Philadelphia with Dr. Physick and began the study of medicine, graduating at the University of Pennsylvania in 1822. Returning to Winchester, he began the practice of medicine. He soon developed a preference for surgery, and did almost exclusively the surgery of the northern section of the State. Among his first operations was that of cataract, which he successfully performed with a needle made under his direction by a mechanic in Winchester. He also performed thirty lithotomies without the loss of a case. Surgery in those days, without the use of anaesthetics, was far more difficult and trying to the operator than at present. The writhings, twistings and screams of the patient were very trying to the operator. In those days, when the country was sparsely settled and the means of communication very limited, men were much more independent and thought and acted for themselves. Dr. McGuire was one of those men who depended upon his own judgment and acted and spoke as he thought. When he was still a young surgeon, a prominent gentleman in the town was found to have a stone in his bladder; Dr. McGuire determined to operate upon him—being the first operation of this kind attempted certainly in this part of Virginia. Some of the elderly and more conservative men of the town urged him not to attempt it, saying Dr. Physick was the only man who operated for stone; Dr. McGuire replied, "Dr. Physick is only a man as I am." He operated and the patient made a good cure.

Dr. McGuire was tendered a professorship of surgery in Louisville and Philadelphia, but declined both. Though at an advanced age, he served through the war in the medical department of the Confederacy. He died in 1875.

Dr. Magill, a native of Winchester, later on

*This history of one of the oldest medical schools in this country was written by Dr. McGuire at the request of the editor and we are deeply appreciative of the study and time he has given in the preparation of the article. We would also be glad to have for our records other facts of the medical history of the State, of which our readers may be cognizant.

became a professor in the University of Virginia. The school ceased to exist in 1829—due largely to the removal of Drs. Cooke and Magill. In 1847 the college was revived, a new charter was obtained, and the name was changed from Medical College of the Valley of Virginia to the "Winchester Medical College". A loan of \$5,000 was obtained from the Literary Fund of the State and additional funds were subscribed by the people of Winchester; a new site was purchased and a very handsome building was erected. This building of red brick and stone trimmings contained two lecture rooms, a surgical amphitheater lighted by a large glass dome, dissecting room, chemical laboratory, museum, and some offices. The faculty consisted of Dr. Hugh H. McGuire, Professor of Surgery; Dr. J. Philip Smith, Professor of the Practice of Medicine; Dr. William Bradford, Professor of Chemistry and Materia Medica; Dr. J. H. Straith, Professor of Obstetrics and Diseases of Women and Children, and Dr. Daniel Conrad, Professor of Anatomy and Physiology. Later on, Dr. Bradford was succeeded by Dr. Bushrod Taylor and Dr. Conrad by Dr. J. Wm. Walls. With the exception of the chair of Operative Surgery and Surgical Anatomy held for three years by Dr. Hunter McGuire, the faculty remained the same until 1861.

The teaching in this college was very practical. Feeling that a session of four months with six or seven lectures a day, was but ill calculated to teach the novitiate the important principles of his profession, the faculty determined at the organization of the school to obviate this difficulty by having a session of eight months' duration, and arranging the lectures so that generally but two, and never more than three, were delivered during the day. These, occupying only the morning hours, left the student ample time for recreation, while the afternoon was spent in dissection—and the night afforded uninterrupted time for preparation for the labors of the following day.

Believing also that nothing is so useful to impress the subject of a lecture upon the mind of the student as daily examinations, they were connected with the lectures; these embraced all of the preceding lecture with such enlargements and comments as were deemed necessary. This was done with no desire to place the students in a comparative grade but to stimulate them to diligence, and by correcting any er-

roneous impressions, to impress, step by step, the facts of the science upon the study of which they had entered.

There was a very good chemical laboratory in the building and the lectures upon this subject were considered very good. There was in the surgical department a clinical demonstration given at each lecture, the students, when possible, assisting in the surgical operations.

In the Anatomical Department, anatomical material was ample and there were many dry and wet specimens accumulated. With the aid of the professor of anatomy, dead subjects were frequently gotten—sometimes going miles to get them, of course, always at night, and many cold nights the professor of anatomy and some of the students were frequently driving and digging all night to secure a proper subject. In fact, it was this search after dead bodies which led to the destruction of the college building.

John Brown made his famous raid at Harper's Ferry in October, 1859. One of Brown's sons came with this party of outlaws. He did not enter the fort or stockade with his father but attempted to seize Hall's Rifle Works at the upper end of Harper's Ferry and directly upon the Shenandoah River. In the early part of the fighting nearly all the men at this point were killed or escaped across the river into the mountains. Many of the students from the Winchester Medical College, led by the excitement of the time, went to Harper's Ferry the morning of Brown's capture of the place—there being a railroad from Winchester to Harper's Ferry. In leaving the train before it reached the main station, they saw this dead body lying upon the banks of the river and, always looking for dissecting material, immediately grabbed it, doubled it up in a store box, and shipped it back to the college where it was found by the clothing and the papers upon the body to be Owen Brown, son of John Brown. The writer saw this body when it was brought into the college building; the man was shot directly in the umbilicus. A dried preparation was made of the body and it was afterwards used for teaching purposes.

When the Federal Army, under General Banks, first entered Winchester, in March, 1862, this body was sent north and the college buildings all burned by the order of General Banks.

Afterwards, on December 16, 1859, among

those being hung in Charlestown, Va., for participation in this raid of Brown, were two negro men, Shields and Copeland. These bodies were scarcely buried after the hanging, before the students of the Winchester Medical School had dug them up and they were brought to the college. The writer saw them as they were brought into the college with the ropes still around their necks.

It was the raid of John Brown and also the harsh treatment of the police in Philadelphia, which determined the southern students in Philadelphia to leave that city and come south to Richmond and New Orleans. Dr. Hunter McGuire was the leader in this movement and from his own funds advanced money, for the transportation to Richmond, to those who were unable to pay their own traveling expenses.

In 1861 the college determined to inaugurate a summer session in addition to the winter one and Dr. Hunter McGuire, who had been the previous winter in connection with the New Orleans School of Medicine, returned to Winchester and became again, together with Dr. J. J. Straith, professor at the Winchester Medical College, making the professors at that time six. But, during the month this new session was to have begun, the secession of the State of Virginia from the United States took place and this new feature of the college was never inaugurated.

April 1, 1861, the college ceased to exist. The Civil War beginning, many soldiers were brought to Winchester and many were taken sick; the college building was used as a hospital from that date until it was burned in March, 1862.

The college only had from thirty to forty students each year. The standard was always high. The catalogue of 1860, which I now have before me, states that no graduate of this college who applied for entrance in the Medical Corp of the United States Army or Navy had ever failed to pass either of these boards successfully. It put into practice many of the recommendations of the American Medical Association, as well as those of other medical organizations, but many reforms were instituted upon its own initiative.

W. P. MCGUIRE, M. D.,
Winchester, Virginia.

What Is The National Research Council?

It is an organization which, while clearly

recognizing the unique value of individual work, hopes especially to help bring together scattered work and workers, and to assist in co-ordinating, in some measure, scientific attack in America on large problems in any and all lines of scientific activity, especially, perhaps, on those problems which depend for successful solution on the co-operation of several or many workers and laboratories either within the realm of a single science or representing different realms in which various parts of a single problem may lie. It is particularly intended not to duplicate or in the slightest degree to interfere with worthy work already under way; to such work it only hopes to offer encouragement and support where needed and possible to be given. It hopes to bring to bear on scientific problems the wisdom of numbers where such wisdom is not made unnecessary by the competence of genius. It hopes to help maintain the *morale* of devoted isolated investigators, to stimulate renewed efforts among groups willing but halted by obstacles, to educate the managers of great industries, which depend on the applications of science for their success, to a fuller appreciation of the necessity of support by them of fundamental science, and to encourage the interest of universities and colleges in research work and workers so that the inspiration and training of American youth for scientific work may never fall so low as to threaten to interrupt the constantly needed output of well-trained and devoted scientific talent in the land.

The various methods of contributing practical assistance to American science include the bringing together of industrial concerns interested in the development of the scientific basis of their processes and inducing them to support the establishment of special laboratories or institutes devoted to this development under the advice of experts representing the Council: the stimulation of larger industrial organizations which may be in a situation to maintain their own independent laboratories to see the advantage of contributing to the support of pure science in the universities and research institutes for the sake of increasing scientific knowledge and scientific personnel on which future progress in applied science absolutely depends: the direct maintenance of university research fellowships; the publication of valuable scien-

tific papers for which there is at present no other suitable prompt means of issuance; the preparation of bibliographies and abstracts of current scientific literature; the setting up of well-considered mechanisms for the collection and distribution of information on current research, university and industrial research laboratories and facilities, research personnel, etc.; and the dissemination through the press and magazines of popular but authentic scientific news and information for the sake of increasing the public interest in and support of productive scientific work.*

News Notes

Our Forty-Eighth Annual Volume.

With this issue we begin our forty-eighth year of consecutive publication, during nearly twenty-two years of which the journal was issued semi-monthly. This is a good record in point of time and we do not feel that the journal has been a laggard in the good it has accomplished. In bringing it to its present high standard our contributors and patrons have aided materially, but let us not be weary in well-doing for, with your help, we hope for it yet greater things.

Let us have your co-operation more fully than before. Each of our readers may contribute his quota. True, we want your original articles and case reports, but we also want proceedings of your societies and news items about yourself and friends. However unimportant they may seem to you, they will interest some one.

Last, but not least, we want your help in making our advertising pages more profitable. Look over these pages each month. Securing, preparing and holding advertisements is more of an art than you may think, and you may help here by patronizing, as far as possible, those who favor us. In writing our advertisers, let them know that you saw their advertisement in the VIRGINIA MEDICAL MONTHLY.

The Virginia Tuberculosis Association,

In its 1920 sale of Christmas Seals, reports a total of \$50,699.58. Of this amount \$30,000.00 has been returned to the local organizations for tuberculosis work and five per cent. to the

National Tuberculosis Association. The funds returned to the respective communities are being used for educational work, case finding, nursing service, nutrition work, dental clinics, child welfare and material relief. Of the one hundred counties in the State, ninety-eight reported sales in the campaign, thus demonstrating the wide spread interest in the tuberculosis problem.

On January 15th, the offices on Grace Street were damaged by fire and the Association is now located at 611 and 612 Chamber of Commerce Building.

At a meeting of the Board of Directors held March 2nd, Mr. Irving L. Spear, of Amherst, Massachusetts, was elected as assistant to Dr. Roy K. Flannagan, executive secretary. Mr. Spear is a graduate of Amherst College and an ex-service man. With the necessary funds assured, an aggressive campaign is planned for the coming year, including clinics and constructive organization work.

Eliminate Undernourishment With Milk.

There are many children underweight and undernourished and the reason for these conditions is not poverty alone but in many cases a lack of understanding of the nourishing properties of certain foods, especially milk. According to a bulletin issued by the U. S. Department of Agriculture, a survey of 10,000 Chicago school children showed that 40% were 7% underweight and investigators were surprised to find that of these more than a half were from comfortable homes in the residential section.

The value of milk in the diet has been strikingly shown in milk-feeding demonstrations carried on in certain schools. In one of the Kansas City schools, a survey made in May, 1919, showed that 37% of the children were undernourished. They were given a school lunch of milk and graham crackers and, by September, the percentage of undernutrition had fallen to 25%. The following March, only 3.7% were below weight and it was expected that all would be brought to normal in a short time. Similar results having been obtained in other cities brings home the fact that milk is a food of highest value in the treatment of children who are undernourished and underweight.

National Hospital Day.

There have been days set aside for many things, but to now there has never been a day

* Vernon Kellogg. Reprinted from International Conciliation. Sept., 1919.

set aside to show the great work for the helpless and afflicted which is being accomplished by the 8,000 hospitals of the United States and Canada. President Harding, governors of states and officers of corresponding rank in Canada have been asked to proclaim May the 12th as National Hospital Day. This date was selected as it is the birthday of Florence Nightingale, the pioneer in modern hospital and nursing methods. Last year we celebrated the hundredth anniversary of her birth and nothing seems more fitting than that this day should be perpetuated.

For the observance of this day, it has been suggested that the public may be invited to visit and inspect hospitals, or certain wards in them; literature may be distributed telling of the work and needs of hospitals; and publicity should be given at the moving picture houses and through the newspapers as to the requirements for admission to training schools and the desirability of nursing as a profession.

The Southwestern Virginia Medical Society

Will hold its semi-annual meeting in Pulaski, May 11 and 12, under the presidency of Dr. W. R. Rogers, of Bristol. Dr. E. G. Gill, of Roanoke, is secretary-treasurer of the society. Dr. Stephen Watts, University, Va., as invited guest, will give an address on Surgery of the Breast. Mr. G. H. Winfrey, secretary-treasurer of the Medical Society of Virginia and business manager of the *Virginia Medical Monthly*, will give a short talk. A banquet will be an enjoyable feature of the first evening.

On the morning of the 12th, there will be a symposium on "Cardio-Vascular-Renal System," which will be participated in by Drs. J. W. Preston, F. H. Smith, A. B. Greiner, S. B. Cary and A. P. Jones. Among the other doctors whose names appear on the program are: Drs. E. E. Watson, A. D. Evans, C. E. Dyer, K. D. Graves, Claude Moore, B. E. Rhudy, S. H. Yokeley, G. A. Wright, W. R. Whitman and E. L. Sutherland.

The Valley Medical Association

Will hold its first meeting in Staunton, Thursday, May 26, 1921. All white physicians, members of their County Medical Society or of the Medical Society of Virginia, residing in the counties lying adjacent to or being in the Valley of Virginia, are eligible to membership and are urged to send their

applications at once to the secretary, Dr. A. C. Byers, Harrisonburg, Va., who will also be glad to answer any inquiries about this society.

The president of the society, Dr. M. J. Payne, Staunton, Va., requests us to state that an all-day attractive program has been arranged and quite a number of papers have been promised, but it is desired to have as many papers as possible, even though a night session will be necessary to complete the program. Lunch will be served in the course of the evening, the hour to be made convenient to members. Those eligible are urged to send in applications and titles of papers and to make their plans to attend and take an active part in a real live and active medical association. There will be no dead issues fought nor lost motions allowed from 9 a. m. to 6 p. m.

Roanoke Academy of Medicine.

At the regular meeting of the Academy, March 7th, Dr. John Staige Davis, of the Medical Department of the University of Virginia, read an interesting and classical paper on "Rupture of the Heart with Report of a Case." Dr. J. Shelton Horsley, of Richmond, Va., presented a most scientific paper on "A Study of a Series of Nephrectomies," illustrated with lantern slides. After the scientific program a delightful buffet supper was enjoyed by the local members and a number of invited guests.

At this time, Dr. Geo. M. Maxwell and Dr. J. T. McKinney, both of Roanoke, are president and secretary, respectively.

Dr. Charles L. Outland,

Representing the American Friends' Service Committee, sailed recently from New York for a turbulent corner of Serbia where Montenegrins, Albanians and Serbians are in continual conflict. Accompanied by his young wife, he will take charge of the American Friends' Hospital at Petch, a small town in Southern Serbia near the old Albanian border.

During the war, Dr. Outland spent 18 months in Quaker relief work in France, working in Paris, Sermaize, Dole, and the Verdun area. The American Friends' Service Committee is closing its mission in Serbia with the exception of the medical work at Petch, where they have a small hospital. Dr. Antoinette E. C. Russell, of Philadelphia, who is in charge, will come home as soon as Dr. Outland is established there. The hospital and dispensary minister to 80,000 persons liv-

ing in the Petch district. An important feature of Dr. Outland's work will be to continue this little Quaker center of "peace and goodwill" in the heart of a turbulent district where feuds and vendetta have long held sway.

Dr. Outland, who is a native of Woodland, N. C., has been an intern at the Johnston-Willis Sanatorium and the Sheltering Arms Hospital at Richmond, Va. Since September, 1919, he has been connected with the North Carolina State Board of Health in the United States Public Health Service. Prior to their marriage, Mrs. Outland held a secretarial position in the Internal Revenue offices in Richmond.

While abroad they will visit England, France, Belgium, Switzerland, Germany, Austria, and Jugo-Slavia.

Public Health and the Submerged Classes.

A survey, authorized by the Oregon legislature, was recently carried out by the University of Oregon in collaboration with officials of the U. S. Public Health Service, to ascertain the "mental health" of its population. The object of the work primarily was to obtain an idea of the problem that confronted that state in the way of economic and industrial loss, to enable the legislature to devise a program that would aid in restoring to health and to lives of industrial usefulness many of those down and out, and to save hundreds of children from growing up to lives of misery. Recent studies by the U. S. Public Health Service have demonstrated that feeble-mindedness is an important factor in prostitution, and a marked proportion of juvenile delinquency is traceable to some degree of mental deficiency in the offender.

From the survey, it was found that more than 75,000 men, women and children, out of a total population of 783,000, are dependents, delinquents, or feeble-minded, and are a constant drain on the finances, health and morality of the state. Also, more than 500 children out of a school population of 32,500 were found to be more or less mentally deficient, many of these in a state where they could yet be much benefited.

There is no doubt but that similar conditions obtain in practically all of the states and legislation should be enacted to help these classes.

Campaign For Orthopedic Hospital.

A campaign has recently been held in this

city to raise \$25,000 for the support of the hospital for crippled children, otherwise known as the Dooley Hospital. An appropriation of \$10,000 a year made by the State legislature has been far from enough to carry on the great work being done at this hospital. During the last fiscal year, 303 operations were performed and 600 plaster casts applied, 589 new patients were treated and 2,099 visits were paid in the out-patient department. It is estimated that there are between two and three thousand crippled children in Virginia, 67% of whom were afflicted prior to reaching the age of 16 years. Of these, statistics show that 90% can be made self supporting if treated in time. Can there be a better cause to help?

The board of directors is composed of a representative membership among whom may be noted names of the following doctors:—Drs. Wm. T. Graham, McGuire Newton and Stuart McGuire of Richmond, and L. T. Royster, of Norfolk.

Local Social Hygiene Conferences.

In March, a two-day conference was held in Richmond, which was largely attended by men and women from twenty-eight counties of the State. This was the first of a series of local conferences on social hygiene matters which will be held in Virginia. Dr. Ennion G. Williams, State Health Commissioner, presided. Cooperating with the local organizations were the U. S. Bureau of Education and the U. S. Public Health Service, the Interdepartmental Social Hygiene Board, the American Social Hygiene Board, the Virginia Social Hygiene Association, and the medical profession generally. The second of these conferences was scheduled to be held in Norfolk in April, and the third in Lynchburg later. Other meetings will be held throughout the State during the year, but definite arrangements have not yet been made for them.

Recent Visitors To Richmond.

Among the Virginia doctors recently visiting in this city are Drs. H. M. Snead, South Hill; Geo. L. Smith, Newport News; Clarence Porter Jones, Newport News; Theodore Hough, University; E. L. Kendig, Victoria; W. D. Prince, Stony Creek; W. Brownley Foster, Roanoke; George C. Callaway, Norwood; Wm. E. Price, Meredithville; T. C. Harris, Kenbridge; George H. Snead, Fork Union; James R. Gorman, Lynchburg; H. U. Stephenson, Toano; W. A. Brumfield, Blacks-

burg, H. H. Hoskins, Mathews, and C. V. Montgomery, South Hill.

Married—

Dr. Stuart Dudley Williams and Miss Mabel Ulrica Grogg, of Norfolk, Va., March 10, 1921.

Dr. Charles Brown Crawford, Washington, D. C., and Miss Joyce Ince, Toronto, Canada, January 22.

Dr. Leslie B. Evans,

Windsor, N. C., has been appointed by the Governor of North Carolina as a member of the board of governors of the State Hospital for Insane at Raleigh, for a term of four years.

Increase In Number Of Venereal Diseases Reported.

For the three months ending last September, there was an increase of about 30 per cent. in cases of venereal disease reported from all states except Nevada and the District of Columbia, as shown by U. S. Public Health Reports. Seven states have laws requiring physicians to report all such cases with the names of patients and nearly all other states require them to be reported without names, so the 30 per cent. increase may mean not that the diseases have increased in incidence but that more physicians are obeying the law. Reports seem to indicate that physicians in western states report these disease better than do physicians in the eastern states.

Dr. Stuart McGuire,

Of this city, was called to Ormond Beach, Fla., the first of this month, on professional business.

Physicians May Be Allowed To Prescribe Beer.

It is announced that the Bureau of Internal Revenue will probably soon draft regulations which will permit physicians to prescribe beer, when in their judgment it will prove beneficial under terms of the Volstead enforcement act.

Burning Causes Number Of Deaths.

According to statistics compiled by the State Bureau of Vital Statistics, 279 persons in Virginia met death last year as a result of burns, 150 of whom were white and 129 colored. A majority of these deaths were among children under three years of age. Several adults lost their lives while attempting to start fires with kerosene oil.

Dr. John D. Foltz,

Of this city, who was recently operated on

for acute appendicitis, is now much improved.

Medical Society Of Virginia.

The medical fraternity of Lynchburg is actively at work arranging for the approaching meeting of the Medical Society of Virginia in that city, October 18-21, inclusive. This promises to be largely attended and will be pleasant, as Lynchburg meetings always are. Dr. George J. Tompkins is chairman of the local committee on arrangements and has serving with him Drs. Don Preston Peters, Jas. Morrison, F. O. Plunkett, Hunter B. Spencer, Thos. N. Davis, John Carroll, John Walker, Elisha Barksdale, W. H. Ferguson, C. E. Busey and R. M. Taliaferro.

Dr. E. C. Levy,

Director of Public Welfare of Richmond, left early this month for a visit to Atlantic City. Dr. Levy was recently struck by an automobile and, as a result of injuries received then, his physicians advised a rest.

Fund Raised For Hospital In Bristol, Va.

In a drive conducted in Bristol, Va., the latter part of March, \$150,321 was raised to be used in erecting the King's Mountain Memorial Hospital, in that city. These subscriptions were made by less than 1,500 people.

Dr. George C. Callaway,

Norwood, Va., has returned home after a visit to his daughter and son-in-law, Dr. and Mrs. Wm. Reid Putney, in North Carolina.

Onancock Doctors Return From Trip.

Drs. Oscar L. Powell and James C. Doughty, have returned to their homes in Onancock, Va., after a trip to New York.

Dr. P. E. Tucker,

Of Buckingham, C. H., Va., we understand is a candidate for nomination to the House of Delegates from his district.

Radium Scarce In Germany.

It is stated that Germany, once the chief producer of radium, now has rarely enough to meet the needs of its great universities. There is said to be only one gram in Berlin and proportionately even less at Heidelberg and other university cities.

President's Personal Physician.

President Harding has appointed Dr. C. E. Sawyer, of Marion, Ohio, his close personal friend, as his personal physician during his administration, with the rank of brigadier general in the medical reserve corps of the army. Dr. Sawyer is quite prominent in his section and one of the physicians in charge of

the Sawyer Sanatorium, just outside of Marion. He belongs to the homeopathic school and was recently president of the American Institute of Homeopathy.

Dr. and Mrs. Fenton Nichols

Have returned to their home in Purcellville, Va., after a visit of several months to North Carolina.

Dr. H. H. Foster,

Of Branchville, Va., recently enjoyed an automobile trip to Como, N. C.

Dr. A. J. Hurt,

Chester, Va., has been elected a member of the board of directors of the Chesterfield County (Va.) Fair Association, which is to hold a two-day fair at the county seat in October.

A Children's Code Commission

Has been appointed by Governor Davis, in order to bring Virginia's laws pertaining to the welfare of the children of this State up to date. They will examine the laws in other states relating to this matter and will suggest such changes in the Virginia law as may be necessary, though it is planned to keep the body of the present statutes practically intact. The commission is composed of nine members, two of whom are doctors: Drs. L. T. Royster, Norfolk, and Mary E. Brydon, of the State Board of Health.

Decline In Price Of Crude Drugs.

It is announced that crude drugs are beginning to feel the downward trend in prices. This has been largely due to the fact that buyers have held off until reductions were offered and importers have come to the point where they must liquidate certain of their obligations, hence the break in prices has followed.

Dr. James K. Hall,

Of Richmond, has been appointed a delegate from the Medical Society of Virginia to the annual meeting of the North Carolina Medical Society in Pinehurst, April 26-28, inclusive, and has been invited to read a paper at this meeting.

Dr. M. L. Townsend,

Of Charlotte, N. C., editor of *Southern Medicine and Surgery* (formerly *Charlotte Medical Journal*), was a visitor in this city in March.

Virginia Not Only State Short of Doctors In Rural Sections.

Under the department of ANALYSES, SELEC-

TIONS, ETC., we are publishing a piece from the *New York Herald*, which was referred to us by the State Board of Health of Virginia. This shows that the shortage of physicians in rural sections is not confined to Virginia alone, but is general, and a plan for overcoming this obstacle is suggested which may be worthy of consideration in our own State.

Madame Curie To Visit United States.

Madame Marie Curie, the discoverer of radium, will visit this country in May, reaching the States about the 17th of the month. While here, she will visit Boston, Yale University, Philadelphia, Washington, Pittsburgh, Chicago, Rochester, Minn., Portland, Ore., San Francisco and Los Angeles. While in Washington, she will be presented by President and Mrs. Harding with a gramme of radium, valued at \$100,000, by the women of America, who have contributed to a fund for this purpose in recognition of her scientific services.

Announcement was recently made of the award to Madame Curie of the gold medal of the National Institute of Social Sciences, because of the benefit of her discovery to humanity.

In Honor Of Mme. Curie,

The June issue of the *Medical Review of Reviews* will be a special radium number dedicated to Mme. Curie. The issue will consist exclusively of articles on radium and its uses, written by the most prominent radiologists in the United States and Canada.

Copies will be sent complimentary to every physician interested in the use of radium and any readers of this item who desire that issue may have it by asking for it from the *Medical Review of Reviews*, 51 East 59th Street, New York.

Special "Fracture" Number.

The *American Journal of Surgery* will in May publish another of its Special Issues, the subjects of the original articles in that number being limited exclusively to "Fractures." These papers will be by recognized authorities upon the subject of fractures and their treatment.

Dr. C. B. Ransone,

Who has been making his home in Newport News, Va., for about a year, has been appointed full time health officer of that city, succeeding Dr. W. F. Cooper who resigned that he might keep up his private practice.

Dr. Ransone was in the service of the U. S. Navy prior to locating in Newport News.

Dr. W. W. Robertson,

Who for a number of years has been located at Witt, Va., has moved to 149 Holbrook Avenue, Danville, Va.

Dr. and Mrs. Goodlatte B. Gilmore,

Norfolk, Va., are receiving congratulations on the birth of a daughter—Evelyn Hales Gilmore—on March 23, 1921.

Watts Hospital,

Durham, N. C., through the will of the late George W. Watts, is to receive \$200,000 which, with his former donations, makes the gifts to this hospital exceed \$1,000,000.

Dr. Guy S. Kirby,

Marion, N. C., has been appointed a member of the board of governors of the State Hospital at Raleigh, N. C., for a term of two years.

"Musical Clinics"

Have recently been conducted at the Chicago State Hospital for Insane, which has more than 3,000 inmates. A Russian pianist of some note in Chicago stated that he believed he could exercise through music an effect upon the minds of some of the mentally unbalanced which would lead to a means of cure. Some interesting results are reported to have been obtained.

The American Association of Genito-Urinary Surgeons

Is to hold its annual meeting in this city on May 2 and 3, under the presidency of Dr. John H. Cunningham, Jr., of Boston. Dr. Richard F. O'Neil, also of Boston, is secretary. This will be the first meeting in the South, of this Association, which numbers about fifty members. Sessions will be held at the Jefferson Hotel. Dr. Robt. C. Bryan, of this city, is chairman of the local committee.

Dr. William H. Parker,

Of this city, was elected vice-president of the Business Men's Association of Church Hill and Fulton, at its annual meeting in March.

Richmond Has Low Typhoid Rate.

In a list published in a recent issue of the *Journal of the A. M. A.*, Richmond is shown to have the lowest typhoid fever rate in cities of 150,000 to 200,000 population south of the Potomac River.

Belgian Medical School Receives Donation.

The Rockefeller Foundation has announced

the donation of 43,000,000 francs toward a total budget of 100,000,000 francs for a new building and endowments of the medical school of the University of Brussels. Part of the money is to be devoted to the establishment of a nurses' training school in memory of Edith Cavell, the martyred English nurse.

War On Sleeping Sickness.

In several of the Eastern states, the presence of sleeping sickness, or encephalitis lethargica, has caused no little alarm and a few cities and states have made the disease reportable. During 1920, there were reported in New York City about 500 cases with a comparatively small death rate. However, in the first seven weeks of 1921, there were more than 218 cases in that city, about 25% of which were fatal. Like influenza, encephalitis lethargica seems to be world wide, only a few cases however, being reported in some countries. While it still baffles the skill of experts, there are sufficient recoveries for us to hope for good results ultimately.

Dr. Herbert Old,

Philadelphia, Pa., has recently been a visitor to his former home, Norfolk, Va.

T. B. Clinics In Halifax County.

Free tuberculosis clinics were recently held at several locations in Halifax County, Va., with the result that 145 examinations were made. There were fourteen active cases and three suspects reported and these were referred to their family physicians for attention. Dr. T. N. Davis, clinician of the Lynchburg, Va., Health Department, served as diagnostician under the auspices of the State Board of Health.

Dr. George A. Torrence,

Until recently of Pound, Va., has moved to Hot Springs, Va.

Dr. I. L. Chapman,

After a prolonged illness, is recuperating in the North.

Dr. Hubert Work,

Pueblo, Colorado, president-elect of the American Medical Association, has been appointed by the President as first assistant post-master general.

Wife Allowed Damages Against Husband For Venereal Infection.

The North Carolina Supreme Court has affirmed a judgment, according to *Public Health Reports*, allowing a wife to recover damages

from her husband because he had infected her with a venereal disease. It was argued by the husband that the fact of marriage constituted a bar to the action, but the Court held that under the statutes of North Carolina a wife could maintain an action against her husband.

Dr. H. D. Scott,

Of Monroe, Va., left for New York, the middle of March, from which place he expected to sail for a pleasure trip to South America.

Dr. F. W. Lewis,

Of Morattico, Va., has been re-elected divisional superintendent of the schools of Lancaster and Northumberland Counties.

Dr. Lawrence T. Price,

Of Richmond, president of the General Alumni Association of the V. P. I., visited the alumni chapters of New York and Schenectady, March 22 and 24, and returned home by way of Newport News, Va., to attend the meeting of the chapter in that city.

Health Talk.

Dr. Ennion G. Williams, of Richmond, State Health Commissioner, last month gave a talk on "Preventive Medicine" before the students of Randolph Macon College in Ashland.

Dr. W. D. Prince,

Of Stony Creek, Va., has announced his candidacy for re-election to a seat in the House of Delegates of the General Assembly of Virginia.

The American Proctologic Society

Is to hold its annual meeting in Boston, Mass., June 3, 4 and 6, with headquarters at Hotel Braemore. Sessions of the society will be held in the Boston Medical Library. There is only one Virginian—Dr. E. H. Terrell, of this city—in the membership of this society. Dr. Alois B. Graham, Indianapolis, Ind., is president, and Dr. Ralph W. Jackson, Fall River, Mass., is secretary-treasurer. Those interested in proctologic matters are invited to attend the meetings.

To Overcome Race Suicide,

The General Council of the Department of the Seine has instituted prizes for large families, according to a recent issue of the *Journal of the A. M. A.* The prizes are given mothers of legitimate children and of recognized illegitimate children. These mothers must have given birth to at least two living children and must have resided for three years in a commune of the department. Three hundred

francs are given for the third child; 350 francs for the fourth, and a progressive increase of 50 francs for each additional child. The prizes are payable in two installments—150 francs on the thirtieth day after birth and the balance when the child is one year old. It has been suggested that an additional municipal tax be levied on bachelors to meet the heavy expense which will be entailed.

Dr. F. J. Kellam,

Formerly of Mineral, Va., has moved to Ernest, Pa.

Dr. H. C. Padgett,

Formerly of Bedford, Va., is now located in Roanoke, Va., with offices in Pythian Building.

Dr. W. T. Wimbish,

Formerly of this State, but who has been practicing in the West for several years, has returned to Virginia and is now located at Alberene, Va.

Massage and Exercise Combined.

Under BOOK ANNOUNCEMENTS in our February issue we noted the publication of the above book by Albrecht Jensen. The address of the publishers, as given at that time, has been changed and any inquiries about this book should be addressed to the author, Box 73, G. P. O., New York City.

Another Chiropractor Fined.

A chiropractor of Edinburg was recently fined \$250 and costs by Shenandoah County magistrates, charged with practicing medicine without a license in violation of a state statute. An appeal was noted and it is stated that the case will be fought to a finish. Dr. J. W. Preston, of Roanoke, and Dr. P. W. Boyd, of Winchester, appeared at the hearing in behalf of the State Board of Medical Examiners.

Auto Accidents More Fatal Than Rail.

According to figures recently compiled by the Southern Railway System from official reports of the Census Bureau and the Interstate Commerce Commission, automobile accidents in the United States claimed 1,474 more victims in 1919 than did accidents on American railways. Deaths from automobile accidents showed a total of 7,969, an increase of 444 over 1918; deaths from rail accidents were 6,495, this figure being lower than that for any previous year since 1898.

Dr. and Mrs. Herman Hertzberg

Have returned to their home in Richmond

after a motor trip to Baltimore and Washington.

The American Congress On Internal Medicine,

At its annual meeting in Baltimore, in February, elected Dr. Sydney R. Miller, of that city, president. Dr. Frank Smithies, of Chicago, was re-elected secretary-general.

American Medical Association.

The annual meeting of the Association, to be held in Boston, June 6 to 10, inclusive, promises its usual quota of interest and pleasure. Clinics are to be held in the various hospitals on the 6th and 7th. The attendance promises to be large and it is urged that hotel accommodations should be made early. Dr. John T. Bottomley, 8 The Fenway, Boston 17, Mass., is chairman of the Hotel Committee, and will gladly assist in securing accommodations for those who write him.

Some of the Virginia fraternity are planning to make the water trip from Norfolk to Boston by the Merchant's and Miner's line. This gives thirty-six hours of relaxation and pleasure and may be found most enjoyable by those who do not often have the opportunity to enjoy a sea trip.

Admiral Stitt's Appointment As Surgeon-General Confirmed.

The nomination made by ex-President Wilson of Admiral E. R. Stitt as Surgeon-General of the U. S. Navy, has been confirmed by the Senate. He succeeds Rear Admiral Braisted, resigned.

Third Fire at Hospital This Year.

Early in March, fire destroyed the left wing of the Clarence Barker Memorial Hospital, at Biltmore, N. C., one of the largest hospitals in western Carolina. All patients were removed without injury. This was the third fire at this hospital since January the first of this year.

The American Association of Anesthetists

Will hold its ninth annual meeting at the Hotel Bellevue, Boston, June 6 and 7, the first two days of A. M. A. week. An interesting and instructive program of scientific papers is being arranged for this meeting.

The Interstate Association of Anesthetists will hold its seventh annual meeting at the Clifton House, Niagara Falls, June 1-3, in conjunction with the Canadian Society of Anesthetists and the Ontario Medical Association.

Miss Randolph Returns to Virginia.

Miss Agnes D. Randolph, who did such an excellent work in the fight against tuberculosis in Virginia prior to accepting a position with the Texas Public Health Association, has returned to Virginia. She is now officially connected with the State Board of Health in the capacity of director of the tuberculosis educational work, which is a new division of this work authorized by the last legislature.

Miss Blanche Webb,

Who has been with the State Board of Health as Director of Red Cross Nurses in Virginia, has accepted a position with the Henry Street Settlement in New York and assumed her duties there on April 1. She expects to remain there about a year, during which time she hopes to acquire information which will make her more valuable to Virginia when she returns here at the expiration of that time.

Dr. Flint Resigns From Yale.

Dr. Joseph M. Flint, since 1907 professor of surgery at Yale University, has announced his resignation on account of poor health, to be effective at the end of the present school year. After this, he will probably return to his home in California.

Dr. C. P. Obenschain,

Who for some years has practiced just outside of Lexington, Va., has located at New Hope, Va.

Civil Service Positions For Medical Men.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examination for medical interne at St. Elizabeth's Hospital, Washington, at \$1,200 a year and maintenance, and vacancies in positions requiring similar qualifications, at this and higher or lower salaries.

Also examination for associate in clinical psychiatry and psychotherapy at St. Elizabeth's Hospital, at \$2,500 a year, and positions requiring similar qualifications, at this and higher or lower salaries.

Appointees whose services are satisfactory may be allowed the temporary increase granted by Congress of \$20 a month. Both examinations are open to men and women, appointing officers having the right to specify the sex desired in requesting certification of eligibles. Applications will be rated as re-

ceived, for both appointments, until July 1, 1921.

Child Health Demonstration.

Preliminary plans for a child health demonstration, unique in character and scope and promising to prove of first importance in the general movement for conservation of child life and health, have been announced by the National Child Health Council, with headquarters in Washington. With an appropriation of \$200,000 set aside for this purpose, the Council, composed of six leading national health bodies, will assist some American community of between 20,000 and 30,000 population and the surrounding county in securing as nearly as possible ideal conditions for the development of its children, from babyhood to adolescence, into sturdy, happy, useful citizens.

The first step will be the selection by a committee of experts of the community in which the demonstration will be carried on over a period of five years. Geographical limitations are not imposed in the selection of the community, but the Council believes certain qualifications necessary to insure results of greatest benefit to the entire country.

Swat the Fly.

Now is the time to begin the 1921 anti-fly campaign, if you have not already entered upon it. This subject is attracting the attention of sanitary and health departments all over the country. In a bulletin issued by the Merchants' Association of New York which is doing an active work in the anti-fly campaign, it is noted that the bibliographic list on the house fly in the last twelve years embraces 136 publications in books and bulletins, issued in many countries and printed in different languages. Get busy and swat the flies!

Syphilis And Insanity.

That syphilis causes a substantial percentage of existing insanity has long been recognized, but heretofore definite statistics bearing on the subject have been meager. To supply this need the U. S. Public Health Service queried the superintendents of 159 state hospitals for the insane in regard to the number of inmates who had become insane by reason of the disease. Of the 115 replies received, 88 supplied data that could be tabulated; and from this, it appeared that 15.5 per cent of admissions and 6.2 per cent of inmates among

the men and, correspondingly, 6.1 and 2.2 per cent among the women were directly due to the disease. The excess in the percentage of admissions over inmates is due to the comparative short life of those who became insane by reason of the disease.

Shall We Have The Segregated District?

Three years ago the segregated district seemed too firmly entrenched in the large cities of the country to be ever dislodged, but today, according to data collected by the U. S. Public Health Service, it has few friends. A questionnaire, sent to the mayors of all large cities with duplicates for reference to prominent men and women citizens and chiefs of police, brought 554 replies from 212 cities. The answers to the first three questions, which asked substantially whether houses of ill-fame, in and out of segregated districts, should be tolerated were from 80 to 90 per cent in the negative. Those to the fourth and fifth questions, which asked whether both the woman and the man should be examined medically and placed under surveillance if found infected were from 72 to 78 per cent in the affirmative.

Delaware Appropriates Money For Helping Mental Defectives.

In Delaware, a program has been inaugurated for institutional care and community supervision of mental defectives resident in the state. The legislature has appropriated \$60,000 for improving the care and treatment of the mental patients in the State Hospital at Farnhurst. A training school for nurses specializing in neuro-psychiatric diseases will be opened, reconstruction aides in both occupational and physiotherapy will be engaged and additional physicians will be employed.

Dr. W. S. Butler, Jr.,

Of Roanoke, Va., has been in Baltimore, Md., since March 1, doing post-graduate work in urology at the Brady Institute, Johns Hopkins Hospital. He expects to be there until September 1, when he will resume his practice in Roanoke.

The Augusta County Medical Association, Inc.,

Held its regular bi-monthly meeting in Staunton on April 6, with a good attendance. Interesting papers were read by Drs. W. S. Whitmore, F. E. Hamlin, A. F. Robertson and A. L. Tynes, all of Staunton.

Dr. H. M. Wallace, of Greenville, is president and Dr. C. C. Jones, of Staunton, secretary.

Dr. and Mrs. Julian F. Ward,

Winchester, Va., recently enjoyed a short visit to Baltimore.

Dr. Theodore Hough,

Dean of the Medical Department of the University of Virginia, was unanimously elected president of the Association of American Medical Colleges at its annual meeting recently held in Chicago. This organization is composed of representatives of about sixty Class A medical colleges of America.

Wanted.

Assistant Physicians (mental disease) and Assistant Physicians (tuberculosis) in the Maryland State Hospitals. Apply to State Employment Commission, 22 Light Street, Baltimore, for full information and application blanks.—(Adv.)

Wanted.

Desiring to retire from practice (Eye, Ear, Nose and Throat), would be glad to get into communication with good, energetic, young man who desires to locate in one of the best towns of the Valley of Virginia. Little or no capital required. Address communications to "R," care this journal.

For Sale.

One McIntosh Universal mode 110 volts, 60 cycles, A. C., 1915 model, including lot of accessories. A bargain for the right man. American Trust Company, Admr., 1005 East Main Street, Richmond, Va.

The Truth About Medicine

During February the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Armour & Co.:

Corpus Luteum Tablets, 5 grains.

David B. Levy:

DuBois Iodoleine, Injectable, Ampoules, 2 cc.

E. R. Squibb & Sons:

Fat-Free Tincture Digitalis.

Book Announcements

Transactions Of The American Pediatric Society.
Thirty-second session held at Highland Park,

Ill., May 31—June 2, 1920. Edited by OSCAR M. SCHLOSS, M. D., Vol. XXXII.

Transactions Of The Colloge Of Physicians Of Philadelphia. Third Series, Vol. XLI. Philadelphia. Papers read before the Colloge from January to December 1919, inclusive. Edited by H. R. M. LANDIS, M. D.

The Johns Hopkins Hospital Reports. Vol. XX, Fasciculus I, 147 pages and 55 full pages illustrations 1920. Vol. XX, Fasciculus II, 101 pages and 23 full page illustrations, and Vol. XXI, Fasciculus II, 60 pages and 4 illustrations, 1921, Baltimore. The Johns Hopkins Press.

Obituary Record

Dr. Eliett T. Brady

Was found dead in his room on board ship in New York harbor the morning of February 14, 1921. He was in the employ of the United Fruit Company as ship's physician, and in that capacity had made numerous voyages out of New Orleans to various ports in the Gulf and Carribean Sea. He had recently spent a vacation in Roanoke, for a number of years his home, and was apparently in the best of health and spirits, though he mentioned to at least one intimate friend that his heart had been a cause of some anxiety to him. He was contemplating taking up x-ray work again in a hospital in Guatamala, operated by the United Fruit Company.

His boyhood home was in Rockbridge County and there his body was laid to rest. He was for a number of years connected with the staff of the State Hospital at Marion, later in private practice in Abingdon, Va., whence he moved to Roanoke to specialize in x-ray work. At the outbreak of the World War he made every effort to serve his country as an army or navy medical officer, but due to his lameness was not accepted. He, however, was appointed roentgenologist to the Allegheny General Hospital in Pittsburgh, Penn., thereby releasing for field service the officer previously serving there. After the signing of the armistice, he entered the service of the United Fruit Company as mentioned.

Dr. Brady was elected president of the Medical Society of Virginia, October 7, 1909, and served the ensuing term. He was for some years also a member of the State Examining Board, and served on many important committees.

His widow and two children survive him.

A committee, composed of Drs. Hugh Trout,

E. P. Tompkins and G. M. Maxwell, was appointed to represent the Roanoke Academy of Medicine at Dr. Brady's funeral. E. P. T.

The following piece was prepared and read before the Roanoke Academy of Medicine by its president, Dr. G. M. Maxwell:

IN MEMORY OF DR. BRADY.

They had dug his grave on the brow of a hill, overlooking a wide expanse of as fair a country as the sun shines upon, and nestling in the midst of it was the boyhood home of this travel-worn and life-weary man of some three score summers.

Surrounded by a small band of his boyhood friends and relatives we laid him quietly to rest in "God's Acre," there to await such a resurrection as the will of an Infinite God may direct.

Hovering about our small band on the marble-studded hill, my mind could picture a larger, Glorified Band of friends and playmates, who, long since having passed into that "Undiscovered Country," love still to linger around the old scenes and places, and were met there to welcome another of the old comrades into their number, and to keep silent tryst with this sorrowing band of friends.

Dr. E. T. Brady was no ordinary man and bore about in his body no ordinary mind. He had drunk deep at the spring of knowledge. The lore of the ancient sages was as familiar to him as the scenes of his boyhood home. The creed of Hippocrates was his code of ethics. Somewhat skeptical as to the creeds and dogmas of the modern church, he was a firm defender of the faith of his fathers, and his name is written high on the list of those who love their fellowmen.

We who have known him best, miss him most, but to all of us his memory will ever bring pleasant recollections of the old days when he was one in our midst.

An old friend of yours and an old friend of mine
Has folded his tent, when the weather was fine,
And leaving us here in our own little glade
Has ambled away to the Realms of Shade,
Where the butterflies flit and the wood-warblers
sing

O'er his head as he rests by a soft flowing spring;
When we know he is happy there, why should
we pine

For this old friend of yours and this old friend
of mine?

Let's laugh and be jolly then, Old Friend of Mine,
For one of these mornings we'll pass down the
line,

Our tents folded softly and laid on our pack,

Our faces set homeward, we'll never look back,
But on to that Country we'll hasten away
Where wild woodland beckons and old comrades
stray;
And there we shall meet him, Oh, won't it be fine!
This old friend of yours and this old friend of
mine.

RESOLUTIONS ON DEATH OF DR. BRADY.

"The Roanoke Academy of Medicine learns with sincerest grief of the death of Dr. E. T. Brady, until recently a beloved member of this organization—a sorrow in which each member bears a personal part. No one member of this society has ever been held in more affectionate regard than was Dr. Brady. His trenchant wit, his skill in repartee and the brilliancy of his intellectual attainments challenged the admiration of all with whom he came in contact, while the warmth of his love for his fellowman, and especially his colleagues in the medical profession, and his unswerving loyalty to his large circle of friends and to his country endeared him in utmost measure to those who were proud to call themselves his friends.

"This society felt it had sustained a great loss when Dr. Brady removed from the city some three years ago, a sense of loss made permanent on his death.

"The sincerest sympathy of this Academy goes out to the family who are thus bereft."

E. P. TOMPKINS,

RALPH W. BROWN,

HUGH H. TROUT,

Committee.

Dr. Herbert B. Lush,

Of Winterpock, Va., died March 6, at a Richmond hospital, after a brief illness with pneumonia. He was about fifty-four years of age and a graduate of the Medical College of Virginia in 1896. He had practiced for many years in Chesterfield County and was very popular in that section. He is survived by his widow and five children, a sister and brother.

Dr. Joseph Taber Johnson,

A prominent physician of Washington, D. C., died at his home at Cherrydale, Va., just outside of Washington, March 12, at the age of 75 years. He was a graduate in medicine from Georgetown University School of Medicine, Washington, in 1865, and from Bellevue Hospital Medical College, New York, in 1867. He was emeritus professor of gynecology and abdominal surgery and president of the faculty of the Georgetown University School of Medicine. He was at one time also connected with Howard University, also of Washington. Dr. Johnson was a member of several societies relating to his special work, and also of the Medical Society of the District of Columbia, of which he was president in 1887. He was at one time a member of the Medical Society of Virginia.

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Original Communications

HISTORY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY IN VIRGINIA.*

By JOSEPH A. WHITE, M. D., Richmond, Va.

I have been requested to impose myself upon your good nature for a few moments to welcome you to the Capital of this great Commonwealth for the purpose of forming an association of the medical men who devote their time and abilities to caring for those suffering from diseases of the Eye, Ear, Throat and Nose in this, our home State of Virginia, to be known as the "Virginia Society of Ophthalmology and Oto-Laryngology," and to give you at the same time a brief history of the development of this specialty in Virginia.

The first and most pleasant part of this duty might more appropriately have been put at the beginning of this day when I first had the pleasure of shaking by the hands so many of my present colleagues and former students, instead of near the end of our inaugural session. Words of welcome, however, if coming from the heart instead of the head, are never amiss, whether extended early or late, and I believe you will realize before you leave that we are glad to have you with us. I wish, however, especially to extend a hearty welcome to two of my old friends, Doctors de Schweinitz and Woods (I don't like to say how long I have known them) and to one of more recent date—Dr. Bordley, as they have only shortly arrived in Richmond, although their reputation long ago preceded them, and they are well-known to all of you for their eminence in the ophthalmological world, even if you do not know them personally, and we feel highly honored that they were good enough to come to our initial session and help in the organization of our Virginia Society.

The latter part of the burden was put on my shoulders because I happened to be older than any other one of you (as far as years counted) and because for the same reason I happened to antedate all of you in this line of work in Virginia.

When asked to give a historical sketch of ophthalmology et alias in Virginia, only two weeks ago, I thought the time too short to get accurate data on this subject, and fear you may find it lacking in that complete information it should present to you, but I ask your indulgence for its shortcomings and request those of you who can add anything of interest, or help me to perfect this sketch for publication, to be kind enough to come to my aid before it goes to press.

Forty years ago I was invited to Richmond, then a town of about 65,000 people, as there was no specialist in this State and none between Washington and New Orleans, except my old friend Dr. Calhoun, in Atlanta. The eye and ear were practically sealed books to the profession of this State, even to the best informed men of this, the leading city.

A Dr. Thomas, who died just before I came here, had given some attention to the eye, and Dr. Frank Cunningham, one of the leading surgeons, attended to eye troubles among his multifarious work. Cataract was operated on by the old couching method and the rest of the ophthalmological work was equally antiquated.

I never quite understood how I was honored by the invitation from some of the leading men here, unless it was due to having met some of them at the American Medical Association's meeting at Atlanta, in 1879. I had been in my home town of Baltimore for a short while after spending several years in Europe in the ophthalmological and aural clinics, and occupied the chair of ophthalmology in the old Washington University School of Medicine, when the invitation was extended to me, and,

*Address before the organization meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, February 3, 1921.

as it was in the days of the rivalry and contention between Drs. Chisolm and Reuling (who managed between them to occupy the public eye to the practical exclusion of everyone else in their line of work) I was not averse to getting away from this professional battlefield to a quieter precinct, where my work would have a chance of recognition. And this was how I came to be the pioneer of this line of work in Virginia.

Although fifteen or more years had passed since the Civil War, there was still a lingering remnant of the antagonism to so-called Yankees to make it anything but pleasant at times to one who came from beyond the Potomac, unless he was known to come from Maryland, and I was often called a "Northern Yankee" by some who thought me begotten much further north and sometimes given the go-by in consequence. But on the whole I had nothing to complain of in the way I was received and treated in this community.

Richmond, however, in those days was quite a Puritanical town (like most small places where everybody knew everybody else's business) and there were some things done where I came from that were not accepted here. The observance of the Sabbath was very strict and, whilst you could cook your food and might even kiss your wife (if you did it where no one could see you) you were not expected to drive your family out in your carriage on that day, and I was by some folks considered a kind of heathen because I did so.

I was also looked at askance by others, because, with a few genial souls, I kept a pack of hounds and went over to Chesterfield fox-hunting once a week in the season—and this, mind you, gentlemen, was in "Ole Virginy," the cradle in this country of the old English custom of riding to hounds. This was all right for other people, but not for a city doctor. You had to be a doctor or a fox-hunter, but you could not be both, and I was often damned as "that fox-hunting doctor" on more than one occasion when it was suggested that I be consulted. The adage of "Mens sana in corpore sano" was old as the hills, and yet in those days if you would keep on good terms with your professional clientele, you had to be at their beck and call every hour in the twenty-four.

You could get drunk—that was a mere peccadillo—as many people would rather have

their own doctor drunk than any other doctor sober (the Drys being scarce in those days) but you could not waste time in any physical exercise. How times have changed! Now a doctor can hunt, fish, ride, golf, dance, and indulge in any kind of physical exercise, except actual prize-fighting, without losing caste. In fact, the pendulum has swung so far the other way, that a doctor who does none of these things is looked on as an old foggy, who fails to recognize that if he wishes to keep mentally alert he must keep physically fit. But he can't get drunk any longer, even if the Dry Law allows him the wherewithal. Notwithstanding the little drawbacks referred to, I was not long here before I found myself very much at home and in very successful practice. As there was no Chair of Ophthalmology or Oto-Laryngology in the Old Medical College of Virginia, in Richmond; nor at the University of Virginia, at Charlottesville, and no clinic in these branches at either school, my first endeavor was to establish an outdoor service for the poor of the city, to serve also as a nucleus for clinical teaching.

A small tenement was rented in Broad street, in a locality now covered by splendid stores, and it was well attended from the start. Soon an indoor department became necessary and a small house was rented on Fourth street, between Main and Franklin streets, with nine beds, and the dispensary conducted in the basement.

A charter was procured in 1881, with a number of prominent physicians and citizens as incorporators, and the Richmond Eye, Ear and Throat Dispensary was established with Dr. Orlando Fairfax as President and Mr. John H. Montague as Treasurer, and with a Board composed of Dr. John G. Skelton, Col. Archer Anderson, Gen. Jos. E. Johnston, Col. A. S. Buford, Mr. Jas. Alfred Jones and Mr. John L. Bacon.

The attending staff was myself and Doctors Chas. M. Shields and Phil Taylor as assistants in charge of the dispensary. In 1882 Dr. John G. Skelton was made President, Dr. Orlando Fairfax having died during the year, and with the same board and staff. In 1883 Dr. Alfred Palmer was added to the staff. In 1885 the work in the Infirmary had grown so much that more room was needed. The charter was amended, giving the institution the right to acquire real estate, and the building on Gov-

ernor street was purchased, giving accommodations to twenty-four patients.

From 1881 and 1882 to 1886 the same staff continued in the service of the infirmary and in that year Doctors Shields and Taylor resigned and their places were taken by Dr. C. A. Blanton and Dr. E. C. Smith. In 1887 Dr. Palmer resigned and located in Norfolk, and I think he was the first specialist in that city. It might be of interest also to state that Dr. Alexander Duane, now of New York, was associated with Dr. Palmer for a while. When Dr. Palmer resigned, Dr. W. A. Gordon and Dr. L. C. Boshier were elected to the staff. The same year Dr. C. B. Blubaugh was house surgeon, and later settled in Parkersburg, W. Va.

In 1888, Dr. Garcin was added to the staff; also Dr. Kuyk, who served several years.

In 1889, Dr. Jeff Kinney was made house surgeon, and in the Fall of 1890 he resigned and located in Roanoke—probably the first specialist there, although I am not sure of this fact.

In 1890, Dr. James B. McCaw was elected President of the Board, following the death of Dr. John G. Skelton. The same year Dr. McGilvray was made house surgeon, and Dr. John Dunn was elected to the staff.

1892, Dr. McGilvray resigned and went to the northwest to locate. Dr. McMurran was appointed house surgeon, and in 1893 settled in Portsmouth.

1893, Dr. Myers was house surgeon until 1895, when he resigned and located in Danville, the first specialist there, although later he moved to Norfolk.

1895, he was succeeded by Dr. John Woodward, who also went to Norfolk in 1897.

1897, he was succeeded by Dr. May, who located in Danville, taking the place vacated by Dr. Myers.

1899, Dr. Ferguson was Dr. May's successor, and he, when his term was over, located in Columbia, S. C.

1898, Dr. Mercer was added to the staff, and I believe served on the staff for twelve or fourteen years. He is now Professor of Laryngology in the Medical College of Virginia.

1900, Dr. Luther Robertson was house surgeon, and in 1904 located in Danville.

1904, Dr. Atwood Forrer became house surgeon, and located in Harrisonburg in 1907. He was succeeded by Dr. Baggarly, who gave

promise of a brilliant career, but was carried off by typhoid fever.

Dr. Morgan, now of Norfolk, and Dr. Weatherly, of this city, were later internes; Dr. Wilcox, the first specialist in Petersburg, and Dr. Edmond, of Clifton Forge, Dr. John Dunn's former assistants, were also on the dispensary staff of the Eye Infirmary.

You will pardon this tiresome rehearsal of the various internes, staff, appointments, etc., but my excuse for so doing is my desire to show how much influence this old institution has had in the development of ophthalmology in Virginia. From it went out the pioneer practitioners in this line in most of our towns—Norfolk, Roanoke, Danville, Portsmouth, Newport News, Petersburg and Clifton Forge—and that they benefited by their connection with the institution and its teaching facilities was fully demonstrated by the fact that they, one and all, were successful men who had the confidence of the profession where they located and could hold their own with representatives of other schools of ophthalmology. I might also mention many others who had their first lessons in ophthalmology in its wards and dispensary, a number of whom are present at this meeting—certainly all of you who graduated in the University College of Medicine between 1893 and 1913, when it was merged in the Medical College of Virginia.

There are very few practitioners of ophthalmology in Richmond who have not, at one time or another, "done time" (not in a disparaging sense) in either the out or indoor department of the infirmary. Among them were Dr. Gill, who was on the staff from 1908 to 1914; Dr. Blackwell, Dr. Hopkins, Dr. Henderson, Dr. Hodnett and others.

Instruction in ophthalmology was begun in 1881, when I was asked by the Dean of the Medical College of Virginia to give a series of lectures on this subject. I did so for two or three sessions and then requested the establishment of the Chair of Ophthalmology, as had already been done by so many of our medical colleges, but my request was considered too drastic an innovation, as the faculty considered ophthalmology a mere minor subject, not worthy of the exalted position of a professional chair, and I was accordingly turned down.

In 1884, Dr. Shields, my then assistant in the infirmary, was appointed lecturer in

ophthalmology and otology and continued in that position until the session of 1903 and 4, when the chair was finally established. He did not enjoy his elevation to the professorship very long, as he, unfortunately, died in 1897. Pending the appointment of his successor, Dr. Kuyk delivered the lectures on this subject. A year or more later, Dr. Davidson was elected Professor of Diseases of the Eye, Ear and Throat and occupied this chair until 1901, when it was divided, and Dr. Clifton Miller was made Professor of the Diseases of the Throat.

When Dr. Davidson died (1911), Dr. Wright, who was associated with him in practice, succeeded to his chair, which he held until the amalgamation of the Medical College of Virginia with the University College of Medicine, the latter school having been established in 1903.

From 1884 until 1893 I continued my clinics daily at the Eye Infirmary, not only for the instruction and benefit I myself derived from it, but also for any who chose to avail themselves of the advantages, and some of the students from the Medical College, as well as graduates of medicine, who were taking what they dignified as a post-graduate course, did so.

In 1893, however, the University College of Medicine was established, as the Medical College of Virginia seemed almost moribund, having in 1892-3 only 38 students.

The birth of the new school was the stimulus required to make the old school sit up and take notice, and never was the saying that "Competition is the life of trade" (if I may be so disrespectful as to apply it to the medical teaching) better exemplified. Seeing their existence threatened by this invasion of their monopoly in medical teaching, the faculty got a hustle on them and the very next year they had 98, instead of 38, students, and the following year 135.

They also, among other changes as above mentioned, established the Chair of the Diseases of the Eye and Ear in 1894 and other chairs not considered at all until the new school had set the example.

Neither the new school, its innovation in the field of medical teaching, nor its teachers were regarded with much favor by the faculty of the Medical College of Virginia, although they in reality should have been hailed as the savior

of the old school, which was dying of dry rot, and welcomed as friends, instead of being regarded as enemies.

However, those days are long since past, and the lion and the lamb laid down in amity years ago, and everybody now is friendly with everybody else.

Since 1903. I have been Professor of Ophthalmology, first in the University College of Medicine and in the Medical College of Virginia since the peace pact in 1913.

Dr. John Dunn was Professor of Otology and Rhinology during the life of the University College of Medicine and Professor of Otology since 1913. Dr. Clif Miller, Associate Professor of Diseases of the Throat and Nose; Dr. Wright, Associate Professor of Ophthalmology. Doctors Gill and Blackwell, Associates in Ophthalmology, have each year given lectures on selected subjects in ophthalmology.

In 1903, the University of Virginia also began the regular teaching of ophthalmology, otology, etc., with Dr. Hedges in the chair, which two years later was divided, Dr. Hedges continuing as Professor of Ophthalmology and Dr. Compton, Professor of Ear, Throat and Nose. I did not know that these had been made full professorships until I was so informed by Dr. Hedges in a letter of recent date.

A number of the specialists in the State who had no official connection with the Eye and Ear Infirmary were students at one or the other of the local medical schools and received their first instruction in Ophthalmology by attending the clinics of the institution.

I might mention Dr. Hunter McGuire of Winchester, president of our present organization, Dr. Garrett of Roanoke, Dr. Herbert of the same place, Dr. Jones of Newport News, Dr. DeJarnette of Fredericksburg, and probably others I have overlooked.

Others besides those who studied at our Virginia colleges, about 37 in number, and attended the Virginia clinics, have come into our towns from time to time to swell the number of specialists in this line in Virginia, so that we now have about 84 men confining their work to this specialty. Of these, 25 are in Richmond and 20 in Norfolk, something more than half the number in the State.

Whilst most of the men interested in this special line are busy, successful practitioners, very few of them have found time, or thought it worth while, to put their valuable experi-

ences in print and thereby give their colleagues the benefit of the knowledge they have accumulated.

I rarely miss a medical gathering which promises to give me help in meeting the problems that are constantly confronting us in practice, and I frequently find I have benefited as much on the outside as on the inside of the convention, from association and table-talks with members who say very little on the floor, some quiet and retiring fellow chockful of practical knowledge about his business that has to be extracted with a corkscrew.

I hope, however, as corkscrews will soon be obsolete, that the new association of the specialists of Virginia will be sufficient stimulus to make its members unbosom themselves, not only in table-talks, but on the floor at its semi-annual meetings for the mutual benefit of all. It is by organization that we can render the best service to the public and to each other and, without personal jealousy, work together for the advancement of our specialty in Virginia.

200 East Franklin Street.

DIABETES INSIPIDUS. WITH REPORT OF A PECULIAR CASE.*

By J. S. DAVIS, M. D., University, Va.

Diabetes Insipidus is defined by Dr. Osler as "A chronic affection characterized by the passage of large quantities of normal urine of low specific gravity". It was first distinguished by Willis in 1674 and is relatively rare. Most of the reports come from South America, where the climate is subtropical, and are described in the Spanish and Portuguese languages with which I am not very familiar so that part of the accounts are inaccessible to me. All cases seem to be in white people. Polyuria from the physiological standpoint, according to Hewlett, may be due to: (1) An increase in renal circulation; (2) A watery composition of the blood; (3) Increased secretory activity of the kidneys. The last may come from an increased elimination through the glomeruli or interference with the resorption of fluid, which Ludwig claims should take place in the renal tubules; a veritable renal diarrhea. Some of the responsibility of the glomeruli has, however, been removed by re-

cent investigators who regard the epithelium of the convoluted tubules as far the most important excretory organs. Polyuria may occur from drinking liquids, and during the removal of edemas, after fever, from certain drugs and salts, such as chloride of sodium, caffeine, and digitalis. It is a well known episode of hysteria, and some nephritides, especially chronic interstitial forms, give polyuria, but the most curious instances come from lesions of the central nervous system. Punctures of the medulla oblongata by Bernard a century ago produced at one spot glycosuria, and a little above it a polyuria without sugar.

The characteristic symptoms of the condition we are to consider may come from a lesion of other portions of the brain; operations upon the hypophysis and injuries in its neighborhood have often been followed by polyuria, and much discussion has arisen as to whether this was due to nervous influences acting on the kidneys, to the liberation of an internal secretion from the pituitary, or the removal of some restraining influences on that organ. Extracts of the posterior lobe possess marked diuretic properties which may continue for some time.

Cushing transplanted the posterior lobe into an experimental animal and produced polyuria which ceased when this graft was removed. This observation supports the internal secretion theory rather than that of the direct stimulation of nerve paths. On the other hand, Beck and MacLean believe the diuresis due to underfunctioning of the pars intermedia. Anatomically, the anterior part is of alimentary origin and the isthmus and posterior part nervous. Their functions differ.

Brown, of London, reports experiments showing that total extirpation causes oliguria, but partial extirpation, especially of the posterior lobe, polyuria, of which he describes four forms, attributing all of them, however, to vaso-motor irritability.

Snell, Rountree, et als, think hyperactivity of the posterior lobe and pars intermedia the chief underlying factor in this disease, and that the anterior lobe may, if hyperactive, give rise to abnormal growth, but, if underactive, to infantilism or dystrophia adiposogenitalis. The gland, then, has some association with both saccharine and insipid diabetes, since disturbance of the posterior lobe increases diure-

*Read before the Southwestern Virginia Medical Society, at its meeting in Bristol, Va.-Tenn., September 29, 1920.

sis and, in some cases, affects the sugar tolerance too.

With this introduction, I will at once describe my experience with the disease and add some speculations, which I hope you will clarify, as to the nature and mechanism of this most obstinate affection. It is not common. I have only six cases to report in nine years and have accurate notes of only four of these.

The first case was met with in June 1909 in the person of a young, white, fireman, 27 years old, with a neurotic maternal family history. He was single and denied bad habits and infections. He had had measles, whooping cough, and malaria. Six months previously he had begun to feel nervous and his bowels moved frequently. This kept up for three months more when frequent micturition set in and the case was pronounced "Bright's" by his first medical adviser. No improvement occurring in three months more, he came to the University of Virginia Hospital to my service. His complaints then were headache, backache, and polyuria. He was extremely apathetic looking, had bad headaches, was sleepless, easily fatigued, and his thirst was insatiable. In bed he was restless, cerebration was slow, and his utterance hesitating, though answers were correct and there were no hallucinations, delusions, nor other evidences of a perverted mentality. His depression seemed to be due to his mental attitude to his condition. Physically, nothing was found except a slight exaggeration of his deep reflexes and numbness in the back of the head. His eyes were all right in every way; blood pressure was 125 m.m. systolic; hemoglobin 75 per cent; red cells were 4,532,000; white 5,200. He passed from 1,500 cc. to 16,000 cc. of urine of specific gravity 1001 to 1002, always from 100 to 500 cc. more than the water he took. He was given valerianate of zinc, grains 5, morning and night, and fluid extract ergot, drops 30, three times a day. He left the hospital three weeks later not improved and reported his condition unchanged on July 16th when he made an office visit. Two months afterwards I was grieved to hear that he had committed suicide in a fit of despondency over his trouble. No x-rays were taken of his skull, I am sorry to say, nor lumbar puncture done, but the syndrome suggests intracranial trouble.

My second case was presented in March, 1911, by an attorney 52 years old, of neurotic family history and with a tabetic brother. He himself was married and had two healthy children. He had had no serious illness and lost no weight. Venereal infection, alcohol, and tobacco were all denied. Before onset of polyuria, which was of six years' duration, he had suffered much with bitemporal headaches which gradually disappeared. His eye reflexes and movements and backgrounds were normal. His blood pressure was 110 m.m. systolic, diastolic 80 m.m. His blood color was 100 per cent. Physically and nervously he was all right. His only complaint was thirst and frequent urination. He passed four to six quarts of chemically normal urine varying in density from 1004 to 1008. He was given valerianate of zinc, 1 grain, three times a day and by May 21st a great improvement had occurred. The quantity of urine was reduced to two and one-quarter quarts and its density raised to 1020. He now complained chiefly of backache and constipation. These being relieved by appropriate measures, he continued about the same until he stopped the medication. On September 13th of that year he reported a relapse, but on resumption of the valerianate of zinc and amylene hydrate he promptly improved, and I presume has remained comfortable, as I have heard nothing further from him directly but know he is living and at his business.

The third case was seen in 1915 in a young clerk, 30 years of age. He was married with one child and a negative family history except that his mother had died of cancer. He had had acute nephritis in childhood and been unjustly suspected of tuberculosis at the age of 19. He denied venereal disease and alcohol to excess though he used a large amount of tobacco. Eighteen months previous to admission he had been taken with headache and polyuria for which he received medical treatment addressed to "blood pressure," which was just then beginning to be fashionable in his town. His pains were relieved but he continued to pass large quantities of urine, particularly at night. Pain in the back, indigestion, and recurring headache during the month before brought him to the University of Virginia Hospital. Physical examination was

negative but he was passing ten quarts of urine. was very thirsty, and drank much water. He perspired easily, was very nervous and irritable, felt "dopy," debilitated, and claimed to have lost his memory, was depressed, and had no appetite. His blood pressure was 115 m.m. systolic and 70 m.m. diastolic. His leucocytes were 12,600 and of normal proportions. He passed from 5,000 to 10,000 cc. of urine whose density never exceeded 1005. Chloride test was applied positively. He was given for ten days large doses of valerianate of zinc (ten grains), three times a day, and sodium bromide at night. Meat and salt were excluded from his diet. Slight relief followed and he went away a week later and returned the following year still suffering with polyuria and nervousness but would not stay for further treatment. He is still alive but I have not learned anything definite about his condition.

The fourth case is even vaguer and almost valueless except as to the note on causation. The patient presented himself in the office only once and was a laborer, 32 years old, who became overheated in the field and laid down in a branch of water to cool himself, swallowing as much of the stream as his gullet would accommodate. He thus seemed to set up a plumbing arrangement which acted continuously, and was, at last account two weeks afterward, a persistent and perennial fountain with an output of 1002 specific gravity. This is interesting in view of the acute onset from an apparent overstrain of the urinary apparatus.

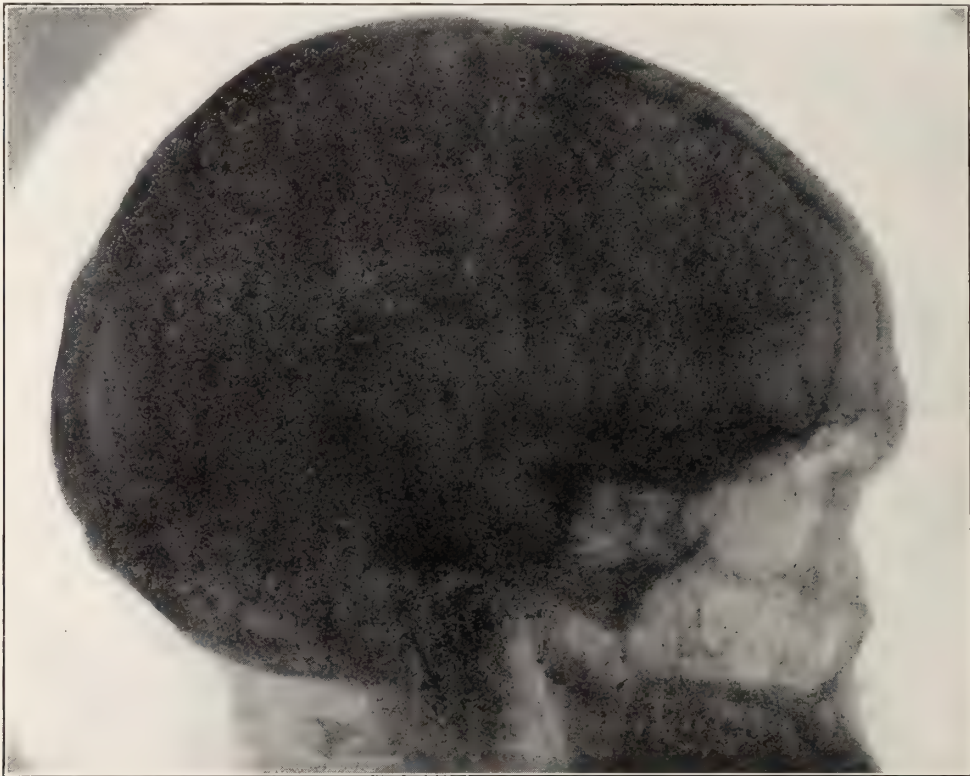
The fifth case was seen this past summer in consultation and the subject was a girl 18 years old. I had known her socially before as a very fat and awkward damsel. A year ago she commenced to have polyuria and headache together with insatiable thirst. It was a case of dystrophia adiposo-genitalis and has been markedly improved in everyway by administration of pituitary extract. The urine and thirst are both reduced and the disfiguring fat has largely disappeared. It looks as if the trouble were originally in the anterior lobe and extended backward. Her energies are almost normal but her happiness still depends on the mutual accessibility of a constantly replenished water pitcher and an unobstructed toilet.

My last case, which is now current and the

one that inspired this subject, came under my charge on July 15th of this year. It was that of a young man, a civil engineer, 28 years old, married, and with one child. He complained chiefly of pain in his head, weakness, great thirst, and profuse urination. His family history was excellent, as well as his own with the exception of a severe case of typhoid in 1914 when he was in bed three months but made a good recovery. He had influenza in 1918 without complications, and a year later mumps with orchitis which left him with one painful and atrophic testicle. He has been subject to headaches something like the present ones but attributed them to his eyes. His appetite has been good even during the present illness and he has gained weight. His bowels are regular. Venereal history is entirely negative, nor does he use tobacco or alcohol. He has always had a nervous temperament and worries easily. His work was, however, congenial, though he had been accused of not liking it. Sensitiveness to criticism has been a marked feature. His present illness dates back to April 1st when he was taken suddenly with an attack of severe pain in the right temporal region. He had been languid for ten days before this but thought it due to overwork. He soon noticed double vision which persisted for some weeks but had disappeared when he came to me. He nevertheless, despite the diplopia, kept at work though he felt "dopy" and could not accomplish much. After a week of effort he quit work and consulted an oculist in Baltimore who told him he was run down and advised rest and glasses. He disobeyed and went back to work. His headache had now gone but he felt weak and nervous. His return to work coincided with a strike in his business and, together with others, he volunteered to do anything he could to help out. He found, however, he was unable physically or mentally to do anything properly and finally wound up by sitting still in his office all day. He could do routine work but could not make decisions. He now had some difficulty in walking and his legs felt numb, even in bed. He felt so nervous that he applied for leave, which he got, and was advised to consult a nervous disease specialist who told him he had had lethargic encephalitis. Ever since the oculist prescribed the glasses he had been passing large quantities of urine and drinking a great amount of

water. He was readily exhausted and much worried by his debility, so he threw up his job and wired the company that he was compelled to go home, whence he was brought to me, as stated. He feels worse during and after meals, though he does full justice to them. He complains that nobody understands him and he is particularly sensitive to the imputation that his trouble is imaginary, which some of his family have suggested. All work and exercise makes him worse and the pain is now constant in his temporal regions and across the

difficulty in fixing and holding objects in vision. His ears were normal and mouth and teeth all right. The lungs showed no abnormalities, nor did his heart save for a slight irritability on excitement and worry. His blood pressure varied from 100 systolic and 80 diastolic to 120 systolic and 90 diastolic, and his pulse from 70 to 96. His hemoglobin was 85% and his leucocytes 4,500 and of normal proportions. His abdomen was not distended, no masses nor tenderness were felt. Neither spleen nor kidneys were palpable and his liver was



Photograph of Skull of Patient in Case VI.

forehead, though distinctly worse on the right side. Printed pages did not look the same to him as before, words were blurred, and he expresses the belief that it is due to a failure of the word picture to be carried to or impressed on his brain. He has the same sort of depression as the first case. These are the salient features of a much abridged account which he detailed at enormous length.

Physically he was a depressed looking, fairly nourished, sallow skinned subject. His head was symmetrical and showed no scars. His eye movements, reflexes, and backgrounds were normal, though he claimed to have variable

not enlarged. Patella reflexes were active. There was no clonus, ataxia, nor tremors. His Wassermann was negative on blood and spinal fluid. His urine varied in quantity from 5,000 cc. to 14,000 cc. of a very pale amber color and with a specific gravity of 1001 to 1010 without albumin or sugar or sediment; except on July 18th to 28th when he got daily doses of pituitrin, there was the smallest possible trace of albumin with elevation of blood pressure to 120 m. m. systolic. The chloride of sodium test was applied and increased the quantity of urine to 17,000 cc. I had no opportunity nor

facilities either to test the great tolerance for alcohol these subjects are said to show.

The x-ray picture of his skull accompanying shows the sphenoidal sinus as large and irregular in outline, the roof bulging up immediately in front of the sella turcica, thereby pushing its floor upward and slightly backward, the result being a very slender and ill-shaped fossa. After these findings pituitrin was given, one ampule once a day hypodermically, and five grains of the extract of the posterior lobe of the gland by mouth, three times a day besides. The urine promptly fell off from 14,000 to 5,000 cc. with very little increase of density; though Rees says this may be due to diminished absorption of water from the intestine which he claims is one of the main actions of this agent. The patient complained so bitterly of more blurring of his vision and mental confusion which he attributed to this medicine that he positively refused to take any more. Accordingly, strychnine, grains 1/20, were substituted, with bromide of sodium, grains 30, at night, until we could get for the latter amylene hydrate that had been effective in an earlier case. No relief was gotten, however, and the urine continued about 12,000 cc. Salt was removed from the diet and proteins reduced to a minimum without any appreciable effect. He never sweated. He remained until August 15th and returned to his home where the surroundings it was hoped would dispel his depression and injured feelings. On September 9th he was reported as unimproved and mentally fearing insanity. He returned to my care on September 11 in the same condition, passing from 10,000 to 14,000 cc. of urine every day. Lumbar puncture revealed a virtually normal cerebrospinal fluid under no extra pressure, with no increased globulin, and a cell count of six. For the first day after this procedure he felt much better and his urine was reduced to 7,000 cc., but 48 hours later he had so much headache and other discomforts that he claimed the reduction in urine was due to his failure to drink the usual amount of water, from 7 to 12 liters. This cephalgia is of Purdee's pituitary type and lends some further evidence to the idea of this location of the lesion. He excretes within 50 cc. of the amount of water ingested. On September 18th his output fell to 2,800 cc. after he drank 2,600 cc. of water, but the specific gravity was still 1001. As his headache got better his quantity increased to

3,700 cc. and he drank 2,600 cc. of water. This was the low water mark, and thereafter up to September 27, 1920, the quantity of urine gradually increased until the amount of 7,900 cc. was reached. All during this time he was nervous and irritable. As his head got better he transferred his complaints to his left atrophic testicle where he professed to feel crawling and drawing sensations which aggravated his already irritable sexuality. I applied salicylate of methyl locally and almost alienated him by the terrible burning it set up. There was great increase of sexual excitement which had been observed occasionally before and which may have some pituitary reference. His chlorides continued low and his specific gravity also, barely 1.6 grams of chloride per liter were excreted. Blood urea was normal. On September 25th valerianate of zinc was increased to two grains three times a day and codein sulphate, one-quarter, had to be used to supplement his nightly bromides. On reassurance by a surgeon that his testicle could not be responsible for his discomfort, he seemed to take one of his occasional braces, was better and slept without medication. I regret that he would not go on with the pituitary treatment originally but I wanted x-rays applied to his skull from various angles in a vague effort to reach the hypophysis. This has been recently recommended despite Rees' ideas as to the mode of action of pituitary substances. His testicular troubles now dominated the scene and vocabulary is exhausted in describing his local agonies. X-rays gave a temporary relief which he reluctantly admits. His whole attitude was fear of something worse rather than hope of something better—the hypochondriac type of neurasthenia.

Diagnosis in this case seems to be certain and I shall briefly discuss the nature of the condition. Such sufferers usually drink large quantities of water, so the question naturally arises as to whether the condition may not be one primarily of polydipsia with a secondary polyuria. Both can occur in man, but the latter is true diabetes insipidus. The distinction is not always easy to make but is based mainly on the effects of forced restriction of water on the urinary composition. In primary polydipsia this procedure will result in a more concentrated urine which approaches normal in quantity and density. In the true form, however, this will have nothing like so marked

an effect. It was tried in this case with the most trivial results at first and afterward with none at all, and caused too great suffering to be persisted in. There was more effect after the lumbar puncture, but the headache he had then caused him to neglect the pangs of thirst and in that way probably reduced the quantity but did not raise the density. The most characteristic feature of the disease is the fact that the concentration remains low despite measures that ordinarily raise it. Extra salt and meat would have this effect in normal persons but not in these cases. No sweating was observed in this case, though it occurred in the first one. This may be due to the drying out of the body from excessive urination, but some think it may be co-ordinate with, or possibly primary to, polyuria. In one case (girl of 8) the 24 hour quantity of urine surpassed the weight of the body.

The exact mechanism is still under discussion. The oldest expression is that of Meyer that it is an essential renal inability to secrete a concentrated urine, and, in consequence of this, a large quantity of liquids is needed to carry away in dilute solution the nitrogen and chlorides that take this avenue of escape. Forschbach and Webber, on the other hand, regard the condition as essentially due to a primary increase in the output of water. Diuresis is produced with abnormal ease and the low density is a secondary manifestation. It is a relative rather than an absolute inability to concentrate the urine. All agree that the primary cause does not lie in the kidneys. Pathological examinations there are negative and no definite association with other renal diseases has been observed.

Opinion has now largely turned to the central nervous system as the original situation of the trouble. Reference was made at the beginning to the experimental puncture of the medulla oblongata producing this syndrome; this kind of polyuria is associated with normal or increased sodium chloride concentration which differs essentially from human diabetes insipidus. Oblongata lesions are not found in these cases at autopsy. On the contrary, many genuine examples have been recently reported associated with diseases of the hypophysis, especially its isthmus and posterior lobe. Cerebral syphilis involving the base of the brain and the meninges there has, though, been held responsible for it and a large number of the

cases have been shown to be due to it. It is the most remediable form, and was searched for in my case eagerly but vainly. It is the usual factor in children, in whom Cowie and Christian have each reported a remarkable case involving the hypophysis. The other cases seem to be due to tumors, injuries such as bullet wounds, etc., of this region. Matthews produced a long continued polyuria by inserting a foreign body into the region of the posterior lobe. Since this part of the gland contains a diuretic substance, the hypothesis seems justified, according to Hewlett, that some cases, at least, of diabetes insipidus are due to an excessive escape of this material into the circulation, but whether all cases are so caused is far from proven. On the other hand, Motzvelde claims that this secretion has a definite anti-diuretic action, particularly in cases of polyuria. This is more consistent with the beneficial effects of pituitrin administration now reported. It is striking that some infectious disease (lues in half the cases) often precedes the trouble. In my last case, mumps, influenza, and possibly lethargic encephalitis, striking the base of the brain, might all be concerned. In the *Journal A. M. A.*, of September 18th, an article is reported from Paris describing a case of this sleeping sickness with polyuria, but it is the only reference I have been able to find. Measles and scarlatina, too, have been observed as antecedents. Males are much more liable than females, five to one in my series, and adults than either extreme of life. No cases in colored people have been reported.

An anatomical diagnosis is hard to make, for the pituitary fossa is subject to many normal variations in size and outline (Hever), so conclusions as to its diseases from x-ray pictures alone are difficult and unreliable. Many apparently very abnormal ones have no specific symptoms. In my case, it looks as if the sphenoid sinus was distended and pushed up the hypophysis. The effect of pituitrin administration was injurious rather than beneficial and in so far incriminates the gland and substantiates the theory of its diuretic power. Such inconsistencies are not fatal, as in one case the gland may be irritated and in another destroyed. The diplopia and ocular symptoms, too, suggest this locality for the lesion. Timme regards some of these cases as examples of his pituitary glandular syndrome, a thymus adrenal pituitary combination whose main char-

acteristics are easy fatiguability, low blood pressure, a peculiar temporal headache, abnormalities of growth, and sexuality, with depression and somnolence, "maladjustment of endocrinous interactivity." According to him, many persons show atypical forms of this syndrome, as I believe others have noted already, and relief is accomplished, sometimes at least, spontaneously, if the sella turcica can be made to accommodate a hyperactive and a hyperplastic hypophysis. This is presumably done by erosion of its bony capsule. If this is impossible, various irritative symptoms, such as epilepsies, etc., may arise in which pituitary extracts may fill a rational indication.

Summing up, the preponderance of evidence is in favor of dyspituitarism being in some measure responsible for diabetes insipidus, but it is not possible to say whether it is an over or under functioning of the gland. Perhaps it may be either, under different circumstances, and according to the part affected. The headaches, eye symptoms, disturbed sexuality, and x-ray findings in my last case certainly suggest this connection. Spontaneous recovery is occasionally observed, though Elsner regards it as absolutely incurable. There is a large nervous element for which bromides and valerianate of zinc are beneficial, as in my first case, and slightly so in my last. Pituitary extracts help others, though authorities differ sharply as to whether the extracts of the whole gland or of the posterior lobe by mouth, or pituitrin hypodermically, is better. Lumbar puncture cured one case but did not do so much for mine, at least yet awhile. Relapses occur and it is doubtful, except in syphilitic forms, if a final restoration is ever attained. Even in the more favorable cases, medication and hygiene will have to be kept up carefully and indefinitely.

SOME CONSIDERATIONS UPON RETRO-BULBAR NEURITIS.*

By HIRAM WOODS, M. D., Baltimore, Md.

SUMMARY.

1. Retro-bulbar neuritis essentially a diagnosis by exclusion.
2. The scotomata—position depends on nerve fibers involved. Shifting tendency.

3. Search for constitutional cause.
 - A. Wassermann by blood and spinal fluid examinations.
 - B. Sugar, blood coefficient.
 - C. Dental origin.
 - D. Sinusitis.
4. Terminology.

Within the last few years, literature has contained numerous articles on ocular neuropathies. While many are of unquestionable value, it seems to me that certain phases have been ignored and that there has been undue confusion in terminology. This paper is a plea for a somewhat broader consideration in the diagnosis of these ocular-neuropathies and uniformity in the nomenclature employed. The features of retro-bulbar neuritis to which I want to call attention are the scotomata, etiology, and importance of a correct and consistent terminology.

Regarding the scotomata, there are, of course, certain of them which are universally recognized. The red scotoma of tobacco or alcohol amblyopia is an example. But it must be remembered that any part of the nerve may be affected and so the scotoma may exist in any part of the field. It may be negative; it may cause only a sense of blurred unsatisfactory vision, and even this may at times pass off and the eye seem normal. It is in just this class of indefinite cases that careful perimetry is most needed. Edward Jackson calls attention to this in his textbook. Out of quite a number of cases in which the perimeter has furnished explanation, I present the following.

In 1911 I operated on the left eye of a man, 42 years old, for chronic glaucoma. In spite of a satisfactory iridectomy, atrophy advanced to blindness. Since then I have had him under regular observation in fear of glaucoma in the right eye. Central vision is, and always has been, normal. The limits of the field are very little contracted—not over five degrees. Hypertension was never discovered by digital test before I used the tonometer, nor have I found it with this instrument. He was kept on a miotic as a safeguard until the past two years when I tried going without it. He has lost nothing. I do not believe he has ever had glaucoma in the right eye. However, he has several times come to see me for what he calls a "funny thing" in his eye. He once discovered

*Read by invitation, February 3, 1924, before the Virginia Society of Oto-Laryngology and Ophthalmology, in Richmond.

a blurred spot in the lower field. With the perimeter, in about the place he described, I found a scotoma 20° to 30° directly down. I had him put through everything but a lumbar puncture with negative results save one; a proptosis of the stomach. He suffers, from time to time, from colon impaction and presents at such times the picture of what is called intestinal stasis. He insists that it is during these attacks of gastro-intestinal trouble that the "funny thing" occurs in the eye. The man is not imaginative. Though I have looked for it, I have never found the blind spot unless he had been through one of these attacks. While we are sure that various forms of infection

and devoting most of her time to charity work, was seen on the 6th of November, 1919. Vision in left eye was blurred. The right eye was free from trouble throughout my observation. The affected eye had 20/200 central vision. The perimeter showed normal limits and no scotoma; but the campimeter gave a dim area for about 5° from the fovea into the nasal field. Three days later central vision had cleared to 20/30. This looked like hysteria, but she had developed a relative scotoma in the nasal field for colors. The upper portion of this blind spot persisted for nearly three months. It varied from blindness for form and color to a red scotoma. I could not reconcile hysteria

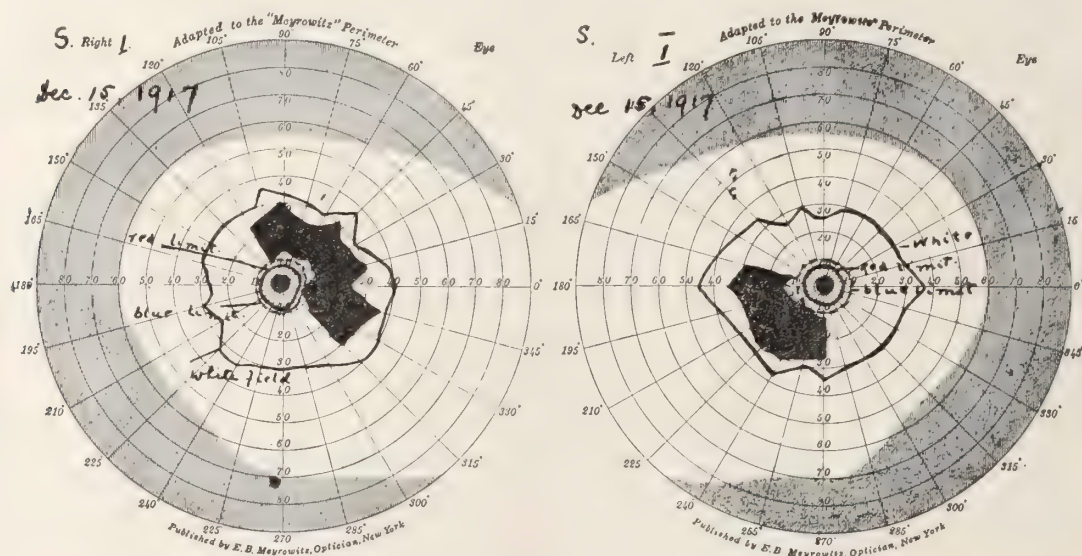


Figure I.

can produce functional trouble with the optic nerve, we do not feel as sure as we used to about intestinal disorders. Whatever the cause, a recurrent, transient peripheral, positive scotoma reappears and fades in about the same place under the same circumstances. I do not know how else to classify this case save as toxic retro-bulbar neuritis. I present it as an illustration of field change capable of causing ocular discomfort and which might be easily missed; not with the view of suggesting a discussion on intestinal auto-intoxication. I am convinced that search for these queerly placed blind spots will often aid in solving a very troublesome class of cases.

A second feature of the scotoma in retro-bulbar neuritis is variation in position and extent. A woman, 56 years of age, unmarried

with this persistent and consistent red scotoma, and believed I was dealing with a retro-bulbar neuritis involving a few perifoveal fibers. Every effort was made to ascertain the cause. Sinuses were negative. So were blood and neurological examinations. She was put on the treatment to which we usually resort when we do not know what else to use, mercury and KI. By March, 1920, she was well and still is. Probably the cause was a toxæmia which we could not find.

A second patient was a young man seen in October, 1917. Shortly after entering the naval service he developed irritable eyes, pain and defective vision. In both eyes there was, with correction of myopic refraction, 20/30 vision. A diagnosis of ciliary spasm had been made at one of the naval hospitals. At first I

saw the man only occasionally. He was discharged from the service in December. The eyes were watery, subject to recurrent hyperaemia, with spasms of the lids on examination:

ment of the temporal field of each eye. I had the man under constant observation for nearly two months. During that time he was subjected to every possible examination and all

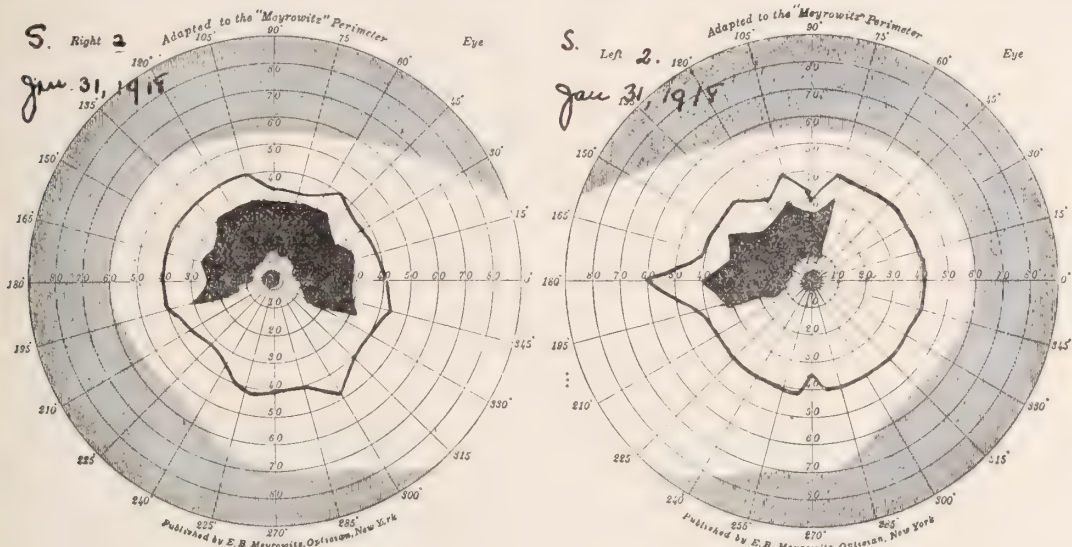


Figure II.

fundi and media negative. Vision was 20/50. Fields are depicted in Figure 1. They show concentric contraction for form and color with large paracentral scotomata in each eye. This was reported from the naval hospital as an

were returned negative. The persistent scotoma in the temporal fields led me to suspect pituitary disease, but I could get nobody to agree with me. Finally, because everything seemed negative, Dr. Crowe suggested exploration of

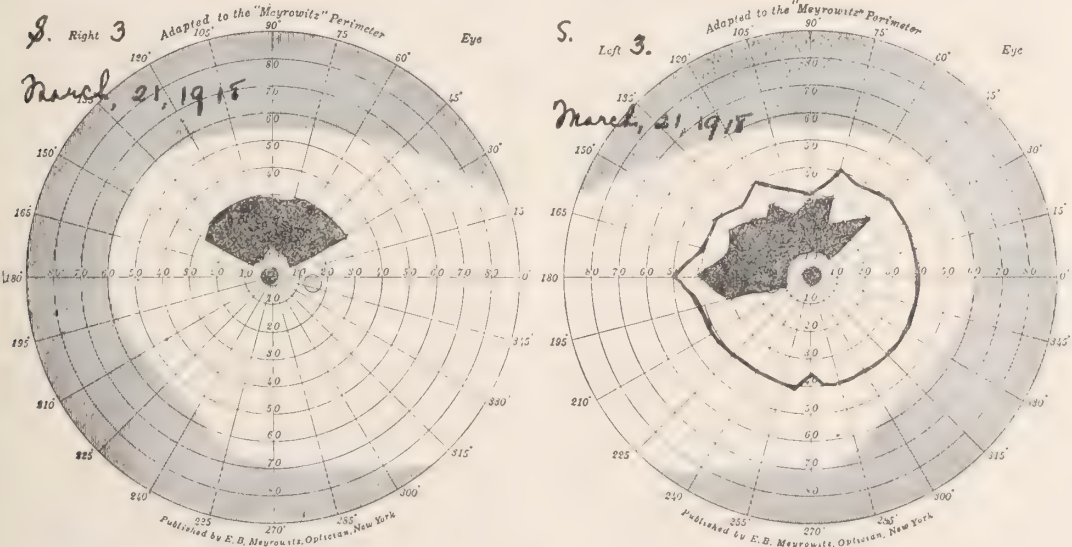


Figure III.

"enlargement of the normal blind spot." From December to March the scotomata varied in extent as depicted in Charts 2 and 3. However, they always preserved one thing—an involve-

the sinuses, to which I assented only because the work was to be done by so skillful an operator. However, the operation was declined. The condition when last seen, April, 1919, (one

year after he was under observation) was: eyes free from irritation; central vision 20/20 and fields as in Figure 4. A letter from his father a few weeks ago stated that his son had been steadily improving without treatment and was doing his work; apparently a case of chronic retro-bulbar neuritis, cause unknown.

I am purposely omitting some well known forms of scotoma. These under discussion seem, however, to possess definite characteristics. Occurring in eyes without visible lesion, they tend to recover, specially if we can find and remove some source of toxæmia. Again, they are practically always most marked for red. Blindness for red persists after that for white and blue have cleared. This fixes the

whelm, as in wood alcohol poison or occasionally in endogenous infections, complete atrophy ensues. The ascertained cause, when it is ascertained, is toxic, and the trouble is usually described as "toxic amblyopia." Sometimes the toxic agent is introduced from without; but extraneous causes can usually be found and eliminated. In looking for endogenous causes we should remember that the eye is part of the nervous system. The Wassermann test, as usually done, is a blood examination. I have seen several cases—three recently—in which blood Wassermann was negative, while the spinal fluid test was positive. One was a case, similar to those under consideration, with lowered central vision and an isolated, nega-

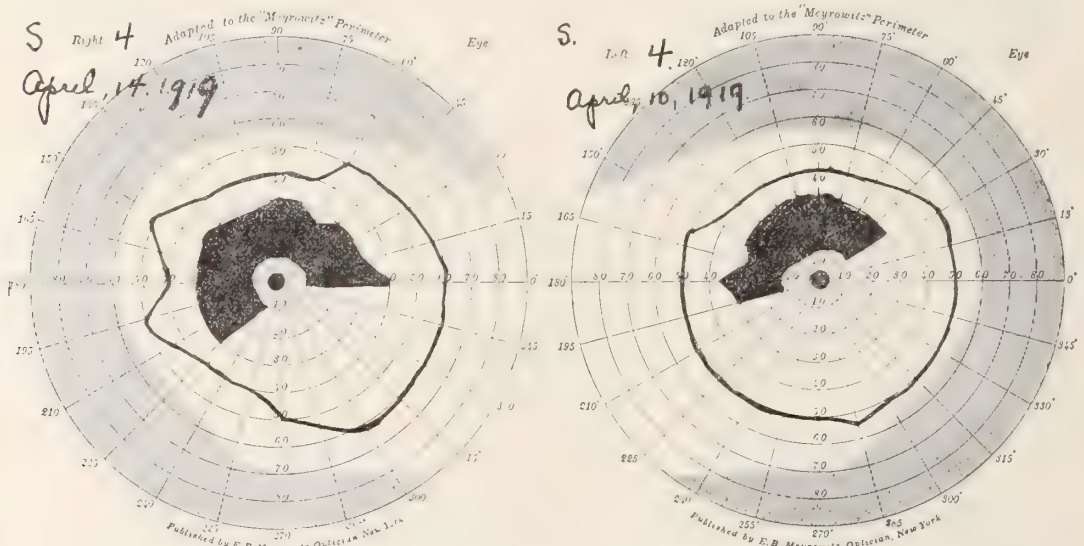


Figure IV.

lesion in the nerve. In a few cases I have seen blue scotoma predominate. The meaning of this is, that for the time being it is the retinal cells which are affected. The picture is one of some toxic influence acting on the optic nerve or retina. As a rule the scotomata are negative. They will be found only, if looked for, in apparently symptomless eyes, unless we regard stubborn asthenopia as a possible symptom of optic nerve trouble.

A word about the course of retro-bulbar neuritis and search for its cause. Starting with some sort of visual defect and without ophthalmoscopic lesion, after a while the papilla is apt to show atrophy. If the foveal region is affected, there is the typical atrophy of the lower temporal sector. If the nerve is over-

tive, peripheral scotoma. The second was a paralysis of the externus with a low grade of descending neuritis. Both got well under treatment suggested by lumbar puncture. In the first, serious consideration was given to exploratory sinus operation based on negative findings elsewhere. The third was a case of early tabetic atrophy.

Dental infection must be borne in mind. However, I have seen but one case in which I thought it the cause of retro-bulbar optic neuritis. There were transient scotomata which have not recurred since the extraction of infected teeth. It is too soon to speak definitely. The case is still under observation.

Another important line of investigation is the blood coefficient for sugar. I have seen

cases of irritable accommodation and defective sight accompanied by a high sugar coefficient where glycosuria had never been suspected. Finally, we must be thorough. Last fall, I saw a patient with early atrophy, reduced central vision (20/70), central color scotoma and good field limits. She had no less than ten pairs of glasses. Her fields had never been taken nor had she had a neurological examination. The association of central color scotoma and lost abdominal reflexes gave the diagnosis.

Lately, stress has been laid upon acute and chronic sinusitis as a cause of retro-bulbar or descending neuritis. I want to give in detail, and largely from memory, the one case I have ever seen in which a nasal, or paranasal cause of blindness seemed clear. The ophthalmoscopic appearances, judging from literature, vary from normal to high grade of optic papillitis. I remember the case vividly because it was my first experience with retro-bulbar neuritis in private practice. A young man had taken a long bicycle ride on a summer afternoon. Reaching his country home, overheated, he fell asleep on the porch. He woke in an hour or so with a chill. The next day he had a coryza, headache and, toward afternoon, found his vision blurred. Two days later I saw him. He saw so poorly that he was led into the office. I could find nothing in the eye to account for the blindness; nor could more experienced observers. We then had had cocaine about two years and I knew it would shrink engorged mucous membranes. The man was put to bed, purged, given potassium iodide, and a cocaine solution was applied to the turbinates with a liberality I would not dream of now; at least, not without having nightmare. In three days he was well. A cure or a spontaneous recovery, which? I thought the former until recent years, but now I am not sure. I had not then schooled myself in the use of the perimeter. I had seen an old McHardy instrument, but it was never used. However, this man gave a pretty good description of central scotoma. My reason for using cocaine was to enable him to breathe more easily. I had not the slightest conception of draining the sinuses; did not know they ever needed draining or that oedematous nasal tissue could block them and produce increased pressure on anything. I believe that this was a case of blindness of nasal origin; and if, with the history of sudden onset, the intra-nasal structures

presented in a case today what this patient's presented, I am inclined to think I should want his sinuses drained by operation if there was no prompt improvement after shrinking.

Dr. Bordley presented his large experience in his paper before A. M. A. Section in April, 1920. I have no doubt of the power of infectious foci to affect neighboring or even remote structures. Sinus infection should, so far as I know, be admitted as a possible source of inflammatory or functional optic nerve disorder. When, with either of these conditions there are clinical or roentgen ray evidences of sinus involvement and no other obvious etiology, there should be no hesitancy about exploration, provided it is done by a skillful operator who understands the dangers. But there is another class of cases now under consideration in medical literature; I mean retro- or intra-ocular neuritis with no clinical evidence of sinus disease. They are operated upon because, in the absence of evidence of other cause, it is thought best to "explore" the sinuses. There are considerations which should make us hesitate. One is, that there are certain intra-ocular nerve changes, easily mistaken for inflammatory processes but which really point farther back than the sinuses to the "silent brain" areas. Another is the natural tendency for uncomplicated retro-bulbar neuritis to clear up. By "uncomplicated" I mean the presence of nothing in the nervous system or blood apt to cause organic or functional defect.

I had under my care two years ago a man with central scotoma in each eye. Nothing abnormal was found, save that in lumbar puncture the fluid was thought to come out with undue force. However, the findings were negative. His sinuses were free from symptoms and negative to the x-rays but were "explored" after every other examination had proved negative. Nothing was found and not a particle of good followed; but, under persistent mercurial and iodid treatment, he has gotten well. This treatment was ordered because I suspected an old specific trouble and when there is a clinical history definitely suggestive of this, a negative Wassermann has little influence with me. A letter from the patient under date of January 26, 1921, says, "Two weeks ago I saw Dr. F. D. Phinney of Cincinnati and his chart tests showed both left and right eye normal. I find from actual observation that my right eye is practically as good as it ever was, but

the left eye is a trifle dim at a distance." It may be said that this is a case of delayed recovery and that the sinus operation affected cure. It is very hard for me to accept this explanation, specially as the so-called hyperplastic sinusitis on which it depends has such an indefinite pathology as rarifying ostitis and subsequent hyperplasia of sinus mucous membranes.

A final reason for operative conservation is the large number of men who have gone into special practice without sufficient knowledge of eye and brain pathology. In a way, we, who appreciate this need, are not responsible for others' ignorance. In another way we are. We must not make a grave diagnosis, solely on exclusion, look like an easy thing. I am not criticising; I am merely giving voice to a warning based on what I think is a lot of indiscriminate operating without the knowledge which should precede it.

I want to use four recently published papers in studying the importance of correct and adequate terminology. A number of articles have, of late, appeared concerning the relation of diseases of the accessory sinuses to defects in vision. Two appeared in the *Journal of the A. M. A.*, one by Dr. Leon White (May 29, 1920), the other by Dr. Harvey Cushing (July 24, 1920). Dr. White's paper is written from the standpoint of the rhinologist. It contains a table of ocular diagnoses. Of 25 cases, 13 are classified as "retro-bulbar neuritis" of various kinds: acute 7; chronic 3; atrophic 2; not specified 1. Seven cases are noted as "neuritis"—2 without qualification; 2 acute; 2 chronic; one axial. Three cases are noted as "papillitis"—five eyes being considered. Finally, there are one case each of neuro-retinitis and neuro-retinochoroiditis.

Again in the *Journal* of September 18th, there are papers from Dr. Edward C. Ellett and Dr. James Bordley, Jr. In a case which recovered vision after sinus operation, Dr. Ellett describes the fundal condition as:—"Marked papillitis with swelling of three diopters and a few small hemorrhages at the edge of the disc." In a second case, of two months' standing which received no visual benefit from sinus operation, the fundal changes were "nerve head swollen two diopters and light in color." This comes pretty close to what is called "choked disc." In addition, the patient had cerebral symptoms. In the

same number of the *Journal* there is Dr. Bordley's paper to which I have already alluded. Regarding the ophthalmoscopic changes in optic neuritis of sinus origin he says: "The ophthalmoscopic picture varied from a normal nerve head to profound choked disc. In eight or nine cases the variation was within normal limits; four patients had clearly defined choked discs; the balance varied from a mild venous engorgement to the typical picture seen in toxic amblyopia. I feel that the ophthalmoscopic picture is only of suggestive value."

Finally, Dr. Cushing's paper has for its theme the mechanical development of choked disc. He adds: "When retro-bulbar neuritis is said to be accompanied by two or three diopters of swelling, we are certainly dealing with something which a hyperplasia of the mucous membrane lining the accessory sinuses is not capable of producing."

I have grouped these designations because they come from capable observers. To Dr. Cushing, association of retro-bulbar neuritis with a disc elevation of two or three diopters means choked disc. Believing, as he does, and as most of us do, in the mechanical production of this lesion, and basing his conclusion on anatomical conditions, he thinks it "unbelievable" that a choked disc can be produced by anything not intracranial. He would regard a choked disc as eliminating a cause located as far forward as the nose. It would have *diagnostic* value. Apparently Dr. Bordley would attach no such meaning to it; he would regard what he terms in his paper a "clearly defined choked disc," as a logical result of sinus disease. We are brought back to the question, should the expression "choked disc" be used for anything except papilloedema from increased intracranial pressure? That, I believe, is its ordinarily accepted meaning. The question is of more than academic interest, for on its interpretation depends the surgical procedure to be followed.

The seemingly interchangeable terms, neuritis, optic neuritis, descending neuritis, papillitis, hyperaemia of the disc and blurring of the neuro-retinal margin (pseudo-neuritis), demand a word. All save the last mean inflammatory processes. This (pseudo-neuritis) is consistent with normal eyes and uncorrected refraction error. As de Schweinitz points out in his text book, the term "papillitis" was sug-

gested by Leber "to avoid confusion of names," and, if clearly understood as applying only to inflammatory conditions, it "is suitable." The essential point is that it *does* specify *only* an "inflammatory condition" of the nerve and excludes choked disc; so do its subsidiary divisions. Neuritis is inadequate for differential diagnosis. Disc "hyperaemia" usually means neural, not nerve trouble. The need of care in terminology is illustrated by the morbid anatomy of descending neuritis and choked disc.

I shall try only to summarize what Fuchs says. To begin with ophthalmoscopic appearance, "The two conditions are not so widely separated as theory demands, since numerous transition forms occur between choked disc and descending neuritis." As regards inflammation of the optic nerve, Fuchs says it starts from its connective tissue portion—the sheath and connective tissue septa. There is a dropsical condition in the sheaths, but, in addition, an inflammatory process involving the striae of connective tissue in the nerve trunks. The nerve fibers play a passive part and are eventually strangled by pressure from connective tissue growth. On the other hand, in choked disc "inflammatory symptoms are limited to the papilla while the trunk of the optic nerve back of the lamina cribrosa is fairly normal. The feature is that the papilla is found to be greatly swollen by an accumulation of oedematous liquid, so that it projects like a mushroom into the interior of the eye." I hardly think it necessary to follow in detail the obvious changes in the neuro-retinal vessels. To my mind, the essentials are that in both choked disc and descending neuritis there is an accumulation of fluid in the intervaginal space, but in papillitis, to use the generic term, the origin is inflammatory, while in choked disc, it is mechanical. Farther developments are typical of the cause. While, as stated by Fuchs, and as proven by universal experience, the visible neuro-retinal changes in transition cases may mislead the most careful observer, there are, in typical cases, certain guides. When observed changes are chiefly in the papilla, as in one of Ellett's cases, when developments have been slow, or when one sees, as he often can if hemorrhages are not in the way, the peculiar climbing of vessels up to the top of the swollen nerve head, the diagnosis of choked disc is imperative. So is acceptance of what choked disc means as to

location of the lesion:—i. e., if its old meaning is to be retained.

It would be hard to find together two more instructive cases than those of Ellett's. They are pictures of success and failure from exploratory operations. Both cases showed pus in the sinuses on nasal exploration, not diagnosed before. In one, the sequel seemed to prove this pus causative of eye trouble. In the other it was not. In this latter, there was clearly choked disc, not inflammatory oedema or descending neuritis. The rhinologist will have his successes in inflammatory infections, descending neuritis with swelling of the neuro-retinal tissues, and failures when he is dealing with choked disc more or less complicated by secondary retinal changes, provided choked disc means what Cushing claims. Right conception of the problem will be better obtained if we learn and keep in mind underlying pathology and talk in the same terms. Retro-bulbar neuritis has its place and limitations. It should be qualified or dropped at the right time and that is, when a fundal lesion becomes visible. Papillitis is a generic term and needs, if it is possible to give, specification of the nature of the neuritis. Choked disc is not admissible when the weight of evidence is in favor of an inflammatory cause. It is, when with swelling of the disc, neither history, symptoms nor appearances suggest inflammatory origin. If, in addition, there be intracranial symptoms, the probability of choked disc from increased intracranial pressure becomes almost a certainty. There is abundant room for error in judgment between these two conditions, and only careful study of everything in a case can enable us to avoid mistakes. But first, we will be helped if we get names right and keep their meaning constantly in mind.

842 Park Avenue.

REPORT OF A CASE OF HORSESHOE KIDNEY.*

By ROBERT C. BRYAN, M. D., F. A. C. S., Richmond, Va.

Kuester states that horseshoe kidney occurs once in eleven hundred times. It is, therefore, not so infrequent as one may think.

Fusion of the lower poles of the kidney is due to a union of their metanephric substances

*Read at the monthly meeting of the Richmond Surgical Society, February 1, 1921.

about the seventh or eighth week in early uterine life. More rarely, there is a union of the upper poles, in which case the horseshoe kidney will be found situated higher in the abdominal cavity as it occurs later than the seventh or eighth week, after the kidney has risen above the promontory of the sacrum. On account of the anterior position of the pelvis of the foetal kidney, and failure of rotation to the normal, the pelves present more anteriorly in the fused state. There is, however, at no time a union of these pelves; they are independent structures since they are always well developed before the parenchymal junction occurs. The course, excursion and entrance of the ureters into the bladder follows the normal plan. Seldom are the ureters inserted into the same side of the bladder, or into the urethra.

has been stated that the fusion of kidneys usually occurs below the level of the aortic bifurcation. In our case it is noted that the union was considerably higher. Kelly and Burnham state that the union may be of three degrees:—

1. The connection between the organs may be a thin fibrous band without any trace of parenchyma.

2. The bridge may be broad and consist of cortex alone, there being no medullary substance. This is the most frequent form of horseshoe kidney.

3. The fused kidney may be of unequal size, the bridge being so thick as to make it seem a portion of the smaller kidney. In this instance, the horseshoe kidney presents a symmetrical appearance on account of the distor-



Fig. 1. Note the antero-posterior position of the pelvis and the proximity of the lower poles. It is at this time of intrauterine life that the kidneys become fused.

There is no reason why a fused or horseshoe kidney should not function normally, but any pathological diversion may arise in horseshoe kidneys, particularly hydronephrosis, which is due to an aberrant artery from the iliac or abdominal aorta; this artery refused to give up its nutrient right in the embryological ascent of the kidney and holds the organ at the foetal antero-posterior angle, which is a pathologic position and at variance with the normal site designed by nature in the paravertebral recesses. These arterial branches usually enter the substance of the kidney behind the pelvis, the main trunk coming from the aorta below the mesenteric arteries and several very small twigs besides running to the upper and lower poles of the kidney. It

tion of the ureters and vessels associated with such forms.

There have been cases reported in which there was an independent ureter coming from this bridge and opening in the bladder. Such cases are extremely rare.

DIAGNOSIS: Diagnosis of horseshoe kidney is most difficult. Occasionally the organ lies upon the abdominal aorta so that the pulsation is readily transmitted to the hand; the outline of the kidney may be felt through thin abdomens, or, under anesthesia, definitely mapped out. Fused kidneys enjoy no normal respiratory excursion; they are bound down by extraperitoneal fascial bands, which at times restrict the vascularization and functioning of the pelvis. Pyelograms show a caudal and mesial

displacement, with antero-posterior location of the pelvis. Cystoscopic examinations may show a supernumerary ureteral opening. Insertion



Fig. 2. Pyelogram of the stained left renal pelvis. Note the horizontal shadow at the lower pole of the pelvis.

of the ureteral catheter allows the catheter to ascend but a short distance, to or about the promontory of the sacrum, and an x-ray of the

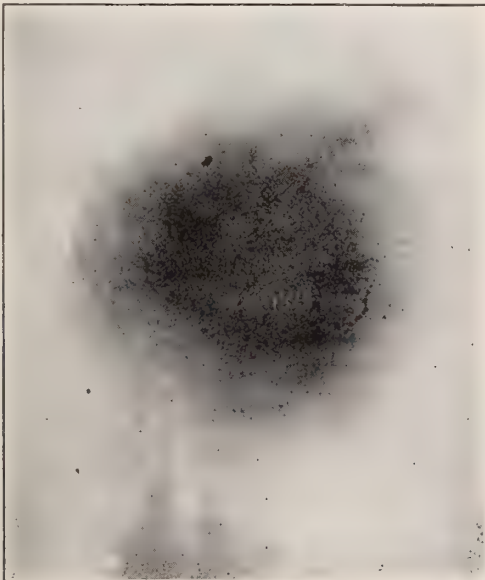


Fig. 3. Lateral view of the stained pelvis of the left kidney. led catheter in situ shows mesial position of the ureter.

Fused kidneys in the bony pelvis have given rise to great complications in labor, and

should, therefore, be an indication for the suprapubic removal of the child.

Attention has been called not infrequently to the susceptibility of the aberrant kidneys to disease, tuberculosis and malignant degeneration, which may be attributed in a measure to the irregular arterial supply and the consequent venous stagnation from the anterior position of the pelvis.

TREATMENT: The treatment resolves itself into that treatment which obtains in the same pathological state of the normal kidney, whether it be stone, T. B., hydronephrosis, or purulent conditions. But the twin organ should be thoroughly investigated by careful urinalysis, renal efficiency and pyelogram, to determine



Fig. 4. Pyelogram of the normal right kidney. Note the branching calyces and mesial situation.

its functioning capacity before surgical intervention is attempted upon its offending fellow. There are many cases in literature in which one member of the fused kidney has been resected, or stones removed as would be done in the non-united kidney.

The writer would report the following case:

G. M., colored, age 35, male, single, factory hand, referred by Dr. Ross.

October 7, 1920. *Cystoscopic examination:* Mucosa injected, that around left ureteral os very much so. Both ureters catheterized, no obstruction. Right urine showed few pus cells, no bacteria. Left urine showed pus cells 3 plus, colon bacilli 4 plus.

Phthalein test: Appearance time right kidney 4 minutes, only trace from left kidney in 15 minutes. Amount from right kidney for 15 minutes $27\frac{1}{2}\%$, amount from left kidney 4% in 15 minutes.

X-ray for stone negative.

October 15. *Cystoscopic examination.* Microscopical examination of separate urine and phthalein test practically same except no appearance from left kidney in 20 minutes.

hurt him, and that, ever since having the "flu," there has been a constant running of pus from the penis. Immediately after seeing blood in the urine, the patient went to see Dr. Ross and Dr. Ross treated him for a week before the blood stopped, but the pus has never stopped, although patient has been taking treatment all the time. The pus is more abundant in the evening and some weeks there is more than at other weeks. The patient has taken medi-

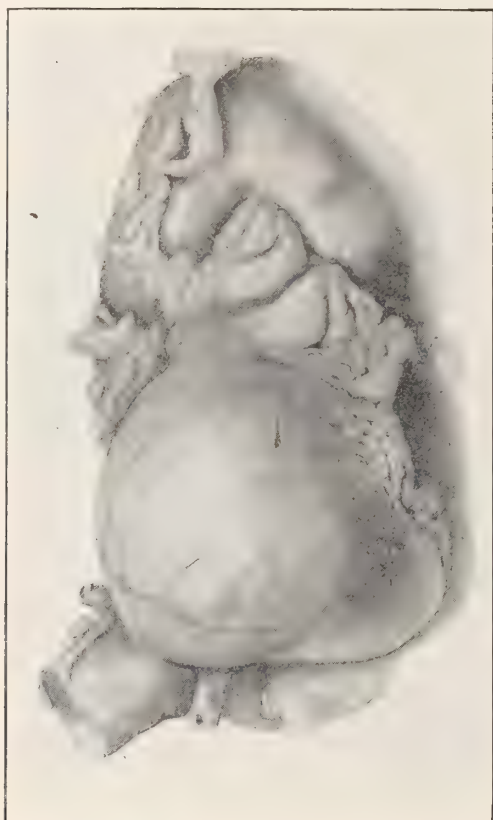


Fig. 5. Actual drawing of removed kidney with the bridge of renal tissue projecting downward and inward.

November 18. Enters Virginia Hospital.

November 19. *Examination:*

Chief complaint: Kidney and gonorrhoeal trouble.

Present illness: First had gonorrhoea when 19 years old and procured medicine which stopped the disease and never had any trouble with it again until 1917 when the patient was taken with "flu" and stayed in bed three months. When he got up his kidneys started hurting him and about two weeks after kidneys started to hurting him blood would come from him when he finished urinating. The patient states that only his left kidney has ever

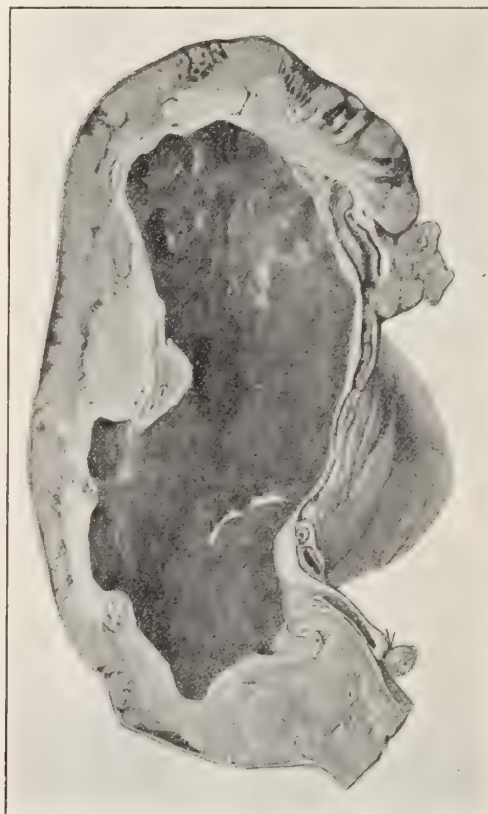


Fig. 6. The kidney laid open. The flattened calyces are evident as is the normal bridge of renal tissue.

cine and injections regularly ever since first seeing the pus but has never been able to cure it up. In October, 1919, Dr. Ross made a cystoscopic examination and renal function test on patient and sent him to this hospital for pyonephrosis of the left kidney and to have the kidney removed, but, on account of the patient having a Wassermann 4 plus, the patient was not operated on. The patient since then has been taking treatments of 606 until he has obtained a negative Wassermann. It burns him to urinate.

Past history: Has had whooping cough

when a child, also measles, mumps, chicken pox and la grippe.

Head: He has suffered with headache and dizziness ever since getting up from the "flu," the pain of the headache being usually in the forehead. Suffers with shortness of breath when he walks much, has puffiness of the eyes sometimes. Never spits up blood, but has suffered with night sweats ever since getting up from the "flu."

Gastro-intestinal: Appetite good usually but suffers with indigestion in the evenings after eating dinner, if he eats anything heavy. Suffers with constipation and always uses laxatives every night. Hasn't suffered with vomiting spells since last year, the vomiting spells started after the patient got up from the "flu," these spells came on after eating and patient would throw up everything he had eaten.

G-U: Has to get up several times at night to make water and urinates about a pint each time; it burns when he first starts urinating. Has had gonorrhoea off and on ever since patient was 19 years old. Taken with syphilis when he was 16 years old and it started on the penis with a sore. Denies ever having a sore on the skin. Patient says doctor cured him up of this and in 1919 he took 606 for his blood. Patient says he has had a stricture ever since January, 1920.

Does not drink tea or coffee and hasn't drunk whiskey for two years. Has lost about eight pounds in last two years.

Skin and mucus membrane O. K.

Eyes negative except for slight corneal opacity at margin of cornea.

Several decayed teeth.

Tonsil on right side slightly enlarged.

Glandular system and thyroid: Inguinal glands on both sides, slightly enlarged and palpable; small masses found in them.

Lungs and heart negative. B. P. 110-80.

Abdomen: Not tender to palpation on the right side but left side tender, especially in the left lumbar region and over the area of the left kidney it is extremely tender to palpation and in the area on palpation the part feels cloggy to the examiner and not of the consistency felt on palpation of the opposite side.

Patellar reflexes normal.

November 18, 1920. *Urinalysis:* Yellow, cloudy, 1012, acid, trace albumin, sugar negative, acetone negative, diacetic acid negative,

indican negative, good many pus cells and bacteria, good many pus cells in clumps.

November 18. *Kidney test:* 1st hour 180 c.c., 2nd hour 615 c.c., total 795 c.c.; 1st hour 25%, 2nd hour 20%, total 45%.

November 19. *W. B. C.* 5400, polys 75, small lymph. 25.

X-ray: Kidney pyelogram, left. Examined for size of pelvis. Patient has hydronephrosis of left kidney, the kidney being now a sac nearly about the size of a grapefruit. The ureter appears normal.

November 22. *Operation:* General anesthetic, ether. Left lumbar incision. The kidney is readily reached, is found to have an enormous pelvic distention, which is freed, and, on extending the incision upward, the costophrenic angle is incised for about one-half inch so that there is an escape of air into the pleural cavity. This is clamped and later on sewed with catgut. The kidney can be liberated nicely above, but inferiorly it is impossible, there being apparently an extension of kidney substance down in a curved form, about the size of a child's wrist; across the vertebra, below the promontory and as far as the hand reaches, this excursion extends on the right side, and is lost in this direction. The contents of the pelvis are aspirated and 30 ounces of a dark uriferous fluid escapes, the tumor collapses and is easily presented in the wound, the pedicle is clamped at the hilum, but inferiorly is still held by this bridge of renal tissue which is resected about 3 inches below the lower pole of the kidney; it is now excised, the ureter tied off and the organ removed. The stump of the tissue left below has every indication of normal kidney tissue; no growths or infectious spots are noted. A large tube is put into the renal space, tissues brought together with catgut No. 2 silkworm gut through the skin. Section of the tumor through the vertebral border of the pelvis shows a much thickened pelvis with hyperemic spots here and there and large caverns spreading toward the cortex so but little renal parenchyma is left.

December 3. Stitches removed, primary union, and patient up.

December 10. Patient gaining rapidly in weight, but complains of some slight pain after eating, referred to a "left McBurney's point" which is taken to be the stump of the actual renal tissue. Leaves hospital.

December 21. Right pyelogram, 20% Na Br. Note the mesial situation of catheter and the pelvis extending across the vertebra, one calyx projecting outwards.

Grace Hospital.

THE INADVISABILITY OF MAKING A HURRIED DIAGNOSIS IN CASES OF SUSPICIOUS TUBERCULOSIS.*

By JAMES G. MARSTON, M. D., Norfolk, Va.
U. S. Public Health Service.

The subject which I desire to present to you this evening I have named "The Inadvisability of Making a Hurried Diagnosis in Cases of Suspected Tuberculosis." It is not my purpose in this paper to enter into the many accepted theories concerned in the diagnosis of the disease but rather to bring out the observations and findings made from a practical viewpoint from the careful study of patients under my actual observation.

You will accept that during the past two years our profession has been busied especially with diseases of the respiratory system and, as a result of the past epidemic of influenza, we have been especially observant for any indication of respiratory disease of a nature disabling. In short, tuberculosis and its diagnosis has become one of the foremost problems. We are constantly on the lookout for the presence of tuberculosis and I believe are somewhat hurried at times to place the diagnosis upon a patient who presents merely suspicious symptoms or signs before we have exhausted all possibilities of study and observation of the case to warrant the actual existence of the disease. Proper consideration, however, must be allowed the shortness of the physician's time and the inability of co-operation on the part of the patient towards the physician from the monetary standpoint. It is against such procedure of hurried diagnosis that I wish to direct your attention and, in support of my statements, to place before you the results obtained in the examination, study and observation of cases under my care. I shall not attempt to occupy your time with a recitation of the cardinal symptoms and signs of the diagnosis of tuberculosis which I assume are familiar to each of you, but will pass at once to the actual discussion of my subject.

Fifteen cases are selected for discussion. All cases, upon admission to the hospital, were previously diagnosed by the profession tuberculosis. Each case upon admission presented one or more of the accepted cardinal symptoms or signs suggestive of tuberculosis. Each case was thoroughly studied and examined after hospital admission. For concreteness, all cases are divided into groups. Cases in groups one and two represent, upon hospital admission, symptoms suggestive of tuberculosis but with no physical signs found after examination suggesting tuberculosis.

GROUP I. Two cases represented with similar symptoms on admission, i. e., fatigue upon exertion; loss of weight steady and progressive; loss of strength; cough of variable intensity and unproductive. Careful physical examination failed to locate any area of tuberculosis. The temperature range was normal at all times; blood pressure normal; sputum analysis negative for tubercle bacillus.

Diagnosis: Case A, pes planus. Case B, malnutrition. Radiograph exhibit.

GROUP II. Two cases represented with similar complaints on admission which are more suggestive of tuberculosis than complaints of group one cases, i. e., fatigue upon exertion; extreme general weakness; steady loss of weight; cough frequent and variable in productiveness; pain in the chest. Complete physical examination failed to locate any area suggestive of tuberculosis. Temperature variation never exceeded one degree during the entire period of residence. The usual variation was one-half degree or less daily, being the usual normal variation range. Frequent sputum analyses never showed the presence of the tubercle bacillus. Blood pressure low in each case. Both cases of a marked neurasthenic type. Conclusions made as follows:

Neither case diagnosed tuberculosis. Case A, valvular disease of the heart mitral valve. Case B, diagnosis, morphine habitue. This patient always remained in bed and claimed to be too weak to get up. Daily inspection would always bring many complaints of pain in the chest, cough and marked general discomfort. Cough was excessive, unproductive and constant. One day this patient was caught maliciously injuring his gums in order to have expectoration of blood and blood streaked sputum. Investigation as to the purpose of this act revealed the unsatisfying desire of the pa-

*Read before the Surgical Section of the Norfolk County Medical Society, November 29, 1920.

tient to obtain morphine medication to which he confessed. He was treated along this line and the symptoms of the tuberculosis promptly disappeared.

GROUP III. Cases in this grouping represent upon hospital admission symptoms suggestive of tuberculosis and, upon physical examination, physical signs suggestive of tuberculosis, both of which factors, however, following careful study and observation, could not be affirmed tuberculosis. The greatest number of our selected cases fall within this grouping and represent seven major diseases of non-tuberculous classification and are presented in an ascending graded scale based upon their close similarity to tuberculosis.

ABSCESS OF THE LUNG. One case presented complaining, upon admission, of productive cough; pain in the chest; marked general weakness and loss of weight. Duration of illness four months at admission. Examination showed a muscular development. The breath was fetid and a frequent cough with much sputum was present. Sputum was thick and yellow green and did not separate into layers. Microscopic examination of sputum showed millions of non-tubercle bacilli. Physical findings of the chest were negative for tuberculosis. Temperature variation slightly above normal. Blood pressure low. No loss of weight during residence. Patient remained in hospital ninety days and sputum never showed the presence of the tubercle bacillus. Cough and fetid breath disappeared. Discharged non-tuberculous.

BRONCHIECTASIS. One case represented. A male 24 years of age, 67 inches in height, and 123 pounds in weight, complaining upon admission of frequent and paroxysmal cough with abundant expectoration; pain in the chest; loss of weight and strength. Duration of illness six months at admission. Previous history of pneumonia one year ago lasting five weeks. Examination showed a lag in the expansion of the right chest. Apical percussion was of diminished resonance and breath sounds at the apex were bronchovesicular and intensified. No rales were present. Opposite the scapulae posteriorly the same type of breath sounds were present with many medium and coarse rales present at the beginning of inspiration and end of expiration, inconstant in location and occurrence. Intense bronchial breathing general. Left chest anterior offered

no change from the normal. Posterior opposite the scapulae the same findings as of the right chest maintained. Bronchial breathing prominent. Sputum analysis showed an output of 550 c. c. in twenty-four hours, being gray in color and of an acid odor. Upon standing, separation into layers appeared, being thick and opaque below, thin mucus in the center and froth upon the surface. Microscopic examination showed much necrotic detritus and many polymorphonuclear leukocytes. No elastic fibrils. Thirty-six sputum analyses failed to demonstrate the tubercle bacillus. Temperature variation was from one-half to one degree daily and mostly during the periods of paroxysms. Residence in hospital one hundred and thirty-one days. Radiograph exhibit.

PLEURISY SEROFIBRINOUS. One case represented complaining on admission of shortness of breath; pain in the chest; cough frequent and productive; loss of strength and weight. Physical examination showed a male of 18 years, height 64 inches and weight 125 pounds. Onset of condition sudden. Examination of the lungs reveals a diminished expansion of the right chest and lung with percussion dullness from the base to the level of the fourth rib. Tactile fremitus absent. Breath sounds distant over lower right chest. Temperature variation septic in character. Paracentesis thoracis was twice performed with the removal of large amounts of straw colored fluid which showed on microscopic examination many pneumococci. Patient improved steadily. Temperature variation in thirty days returned to normal and there remained no area of lung involvement and no rales. Sputum analysis never showed the presence of the tubercle bacillus. Remained in hospital fifty days. Discharged improved and non-tuberculous. Radiograph exhibit.

CHRONIC BRONCHITIS. Five cases represented all offering similar complaints on admission. One of the five cases is chosen for discussion and representing the similar findings of the four undiscussed cases. Complaints on admission were pain in the chest; cough excessive and variable; abundant expectoration; shortness of breath especially upon exertion; loss of weight and strength; night sweats. All offered frequent exposure to elements.

The selected case is a male aged 29 years, weight 141 pounds, height 67 inches. Thorough

physical examination failed to show any areas of tuberculosis. Examination of lungs upon different occasions was negative except for intensified bronchial breathing posteriorly opposite the scapulae right and left, where many medium and coarse rales were heard at the end of inspiration and inconstant in position and occurrence. Blood pressure systolic 110 and diastolic 82. Duration of residence eighty-six days. Temperature irregularity scarcely noticeable. Pulse rate showed no irregularity or variation. Repeated sputum analysis failed to demonstrate the presence of the tubercle bacillus. No loss of weight during residence. Radiograph exhibit.

The four other cases which I do not take the time here to discuss offered similar physical findings and in no circumstance was the actual presence of tuberculosis suggested or proven. All remained under observation for sixty days or longer and improvement was at all times recorded.

GAS EXPOSURE BRONCHITIS. One case is presented being a male aged 35, weight 142 pounds, height 64 inches; complaining on admission of cough, especially upon reclining; abundant expectoration, especially in morning and evening; pain in the chest; night sweats; hemoptysis fresh and warm; loss of weight and strength. Duration of illness one year at time of admission. Previous history of pneumonia of right lung and exposure to enemy gas. Examination showed a diminished expansion of the right chest. Impaired resonance at base of right lung and breath sounds of intensified bronchial character posterior with medium and coarse rales of inconstant location and character. The left chest offered no anterior changes of note. Posteriorly, the breath sounds opposite the scapulae and below were similar to those present in the right chest with medium and coarse rales present. Heart is generally enlarged with a roughening of the mitral first closure sound and all other valve sounds accentuated. Duration in hospital 225 days. Sputum never showed the tubercle bacillus. Temperature range slightly over normal. Blood pressure low. During residence, eight separate attacks of hemoptysis occurred of varying amounts, being bright red in color and frothy and welled up from throat, without sputum or cough.

CICATRICAL CONTRACTION OF LUNG. INTERSTITIAL CIRRHOSIS. This case is a man 59 years

of age, admitted to the hospital with the diagnosis of advanced tuberculosis of the lung. Complained upon admission of pains in chest; severe cough with abundant expectoration; loss of weight and strength. Duration of illness three months. The left chest appears retracted at the apex and movement is diminished. Percussion over upper lobe of left lung is flat and breath sounds are amphoric and exaggerated. The right chest is broad and full with hyper-resonant percussion and breath sounds emphysematous. No boundary of the heart is traceable in the right chest and all the valve sounds are heard over upon the left chest and only transmission sound is heard over upon the right chest. Temperature variation normal. Sputum negative for the tubercle bacillus. Residence in the hospital fifty days. Discharged non-tuberculous.

SPINAL OSTEO-ARTHRITIS. This case was admitted to the hospital with the diagnosis of tuberculosis of the spinal vertebrae. Aged 30, negative family history for tuberculosis; past illness for influenza; history of gonorrhoea ten years ago. Complaints on admission were: Stiffness of back with pain and limited movement of the lower back; loss of weight and strength. Duration of illness eighteen months at admission. Onset with pain in lower back followed by stiffness and difficult movement. No area of tuberculosis was obtainable upon examination of the chest. Size of heart diminished with a mitral murmur present. Wassermann negative for syphilis and sputum negative for tubercle bacillus. Temperature variation normal. Blood pressure systolic 112 and diastolic 82.

Examination of the spinal column showed a rigid non-flexible straight outline from below to the seventh dorsal spine and a forward incline of about twenty-five degrees above. Backward and lateral movement is impossible. Outlines of the vertebral spines are prominent in the midline of the back. Scapulae angles are prominent and contrast strongly against the flat surface of the back below. Vertebral spines are in straight alignment. Muscles of the back are of increased rigidity.

Radiographic study of lumbar vertebrae.—All the spinal vertebrae are clearly visible and no posterior curvature is present. A general uniform narrowing of the inter-vertebral fibrocartilaginous discs is present, giving the appearance of diminished distance of height from

upper and lower margins rather than in the anteroposterior direction of thickness. The vertebrae proper are nearer each other than normal. There is no irregular displacement of the margins, no overriding of the vertebral margins immediately above and below the discs. Uniformity and regularity of outline exists. No erosion nor evidence of signs of disintegration. Upon the lateral aspects of vertebral margins, right and left, adjacent to the discs, there is a haziness which reaches a quarter of an inch laterally beyond and is confined to the adjacency of the discs. The general total appearance is that of some constructive rather than a destructive process. Suggests a form of constructive arthritis of the intervertebral discs with ankylosis.

CONCLUSIONS.

In all the cases presented in this paper, a definite diagnosis of tuberculosis had been made previous to admission.

None of these cases after thorough examination and observation indicated the presence of tuberculosis.

In each case the physician who was among the first to examine the patient placed the diagnosis of tuberculosis without allowing sufficient time and study to substantiate his opinions, being led to his conclusion upon merely suggestive symptoms or signs.

Each case was compelled to adjust himself to the psychological effect that the stamp of tuberculosis placed upon his mental attitude and caused him a greater effort to remove from his mind the fact that he did not have the disease.

In each case the diagnosis was first made by the physician whom the patient had known for some time and to whom he turned for advice when first ill and, because of the confidence held for this physician, he reluctantly gave up his opinions. This last factor should encourage each and all of us to respect that confidence held by our patients and encourage us to never make a hurried diagnosis of tuberculosis merely upon suggestive symptoms or signs of the disease.

The presence of any one of the accepted symptoms or signs of tuberculosis, in the absence of other expected symptoms or signs, is not of sufficient reason for the diagnosis of tuberculosis to be made.

Finally, I do not wish to leave the impression that we should not be energetically on the

lookout for tuberculosis. I have merely endeavored to show to you the ease with which any of us may be misled and how unwise or unwarranted it may become to hurriedly conclude a diagnosis without first permitting thorough investigation of every balancing factor that eventually leads to a conclusion.

U. S. Public Health Service Hospital.

DISCUSSION.

Dr. C. Lydon Harrell:—I think the Society is fortunate and is to be congratulated on having such an interesting and instructive paper as Dr. Marston has presented us with this evening. Dr. Marston enjoys a position that makes us envy him, at least I do. He has a large clientele, drawing patients from a large number of physicians, and has them in a hospital, absolutely under his control for an indefinite period. He can have any amount of laboratory or x-ray work done free of charge to the patient. This gives him an opportunity for closer study, and the chance of making a more accurate diagnosis than the practising physician can.

The class of cases he has reported to us this evening was selected from a very large number, and I dare say such a selection would not be found in private practice over a long period, probably several years.

There are two sides to every question; he withholds his diagnosis of tuberculosis for weeks, in some cases, months. This might do in the army and navy, where you have your patient under absolute control, but it is not fair to the person in the average walk of life, coming from homes where there are children and others that might be infected. We know that children are more susceptible to infection under 15 years of age than at any other time, so I do not think it is right that a person should be allowed to go and come, cough and expectorate at his will, if there is a probability or even a possibility of having tuberculosis, without being told that he is at least a suspicious tuberculous case and should be careful.

Dr. Marston's x-ray plates are very pretty. I am not very shrewd when it comes to interpreting chest plates, especially flat plates, but, if I may be allowed to comment, I would say offhand that some of his pictures look very much like tuberculosis to me. Some of them show a great deal of peri-bronchial thickening with a marked density of the apices. I do not recall anything that will show a marked density at an apex except tuberculosis. Probably an injury might. I think we would have to prove this was not tuberculosis rather than to prove that it was. I would like to hear some of the x-ray men discuss that point.

The doctor reports a case of pulmonary abscess that had previously been diagnosed tuberculosis. He did not say what kind of abscess, or why he changed the diagnosis. He also reports a case of pleurisy with effusion, sent in as probably tuberculosis. Pneumococcus was isolated from the exudate, pronounced non-tuberculous. Dr. Marston did not take into consideration what might happen two or three years from now. I think it is the consensus of opinion that pleurisy with effusion means tuberculosis until you can prove otherwise.

He reports two or three cases of chronic bron-

chitis in patients under 30 years of age. I would be afraid to say chronic bronchitis under 40 years of age unless he gave a history of inhaling poisonous and irritating gases. On the other hand, I think it by far safer if we suspect tuberculosis to tell the patient the facts in the case and keep him under observation until the diagnosis is made, with the instruction to use precautions in regard to coughing and expectorating, just as you would any other suspected case of contagious disease. As someone has well said, "It is better to have a hundred people plod along through life, 'mistagged tuberculosis' and outlive their expectancy, than to bury one with chronic bronchitis."

I wish to thank Dr. Marston for his excellent paper; it was well worked up and well presented.

Dr. James W. Hunter:—I wish to thank the President for inviting me to discuss this paper. I propose to do so from a roentgenological aspect, as he has suggested. I wish also to express my appreciation to Dr. Marston for the admirable way in which he has presented the subject.

I may say in the very beginning that most of us used to feel that we knew something about tuberculosis. But, as we grow older, we can not feel so sure. Personally, I think that most of the roentgenograms presented showed tubercular lesions; whether a lesion is active or not, however, can not be determined roentgenologically. Often, all that we can say is that the lesion is suspicious.

It is a peculiarity of pulmonary tuberculosis (at least it is in the adult) that the apex is generally infected. So, if we find an apical involvement, or even a thickening of the pleura, the burden of proof is to show that the lesion is not tubercular. Conversely, if a part other than the apex is involved, it is the burden of proof to show that the lesion is tubercular. Syphilis, anthracosis, and the various diseases due to the inhalation of dust, always begin from the hilus; rarely, if ever, is the apex infected. Of peribronchial infiltration much has been said; the matter is still under discussion. But the definite extension of the bronchial lines to the periphery is to be regarded as suspicious. The fan is quite diagnostic.

To sum up: A diagnosis of early tuberculosis is generally possible; whether it is acute or not is impossible from the roentgenological examination alone; the involvement of the apex is to be considered tubercular until it is proven otherwise; and a lesion elsewhere without an apical involvement is, as a rule, to be looked upon as non-tubercular.

Dr. Chas. R. Grandy:—The conditions governing admission of tubercular patients to Government hospitals is very different from that in ordinary sanatoria. The patients come to outside doctors asking for Government assistance when they frequently have no place to stay while they are being observed. As a result, these cases are given the benefit of the doubt, and are put in the Government hospitals labeled "Tubercular," but with the idea that the Government surgeons will have time and opportunity to study them thoroughly.

In the private institutions, the people stay off just as long as possible before being willing to go in for treatment. In the Government institutions they are willing to be labeled "Tubercular" in order to get free support.

As a result of this, between 20% and 25% of the patients to some of the army hospitals have been discharged as non-tubercular.

I do not feel that the ordinary practitioner should be blamed for sending such a case into the Government hospitals, because he has no opportunity to properly observe the case, and feels that the Government is amply able to take care of such a man while making the diagnosis.

Dr. F. C. Rinker:—All of us, I am sure, have had cases in whom it was difficult to make a conclusive diagnosis of tuberculosis. Dr. Marston, I am afraid, is treating the subject of diagnosis a bit too lightly. I had rather make a diagnosis, at least tentative, of tuberculosis in a non-tuberculous patient than make a negative diagnosis in one who had the disease. In other words it is up to us to prove that a patient has **not** tuberculosis rather than to prove that he has.

Regarding the x-ray plates, I do not believe it possible to accurately diagnose lung pathology from the flat plate, believing that they should always be made in stereo. Some of Dr. Marston's flat plates, however, look tubercular and one looks syphilitic with aneurism of the descending arch. Again, the roentgenologist can not make a positive or negative diagnosis of incipient tuberculosis, but it is his duty and place to report areas of density to the clinicians with suspicions, rather than conclusions, and it is the internist's place to make the final conclusion.

The question has come up regarding primary pleurisy. I personally do not believe that such a condition is necessarily tubercular.

Dr. Marston's point regarding thorough study and investigation in all suspicious lung cases is well taken but I believe he tends to lay too much stress on the finding of tubercle bacilli in the sputa.

UNDERGRADUATE INSTRUCTION IN TUBERCULOSIS.*

By WALTER C. KLOTZ, M. D., Charlottesville, Va.
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In January 1920 the Medical Faculty and the Board of Visitors of the University of Virginia created a special department of tuberculosis in affiliation with the new tuberculosis sanatorium which had been established by the State Board of Health, at a site about three miles from the University, near Monticello. As this department is now nearing its second year of operation it might be of interest to physicians of Virginia to know a little more about its purpose, the plan of work and what this department has accomplished.

One of the saddest commentaries on medical education in the past has been the lack of practical instruction and training in the diagnosis and treatment of tuberculosis. Any one who has had any special experience in this work will have met with the unfortunate consequences of this lack of special education on the part of general practitioners. Nor is this

*From the Medical Department of the University of Virginia.

lack of knowledge limited to general practitioners. Occasionally, even consulting internists, who are eminent in their knowledge of other illnesses, will fall wide of the mark when it comes to tuberculosis. While it is the most widespread of infectious diseases and while it has headed the list of causes of death, its place in the medical curriculum has been a secondary one. On the part of the student, the teacher and the interne it has received but scant attention. The mere number of deaths moreover is less significant than the fact that most of these occur during or before young adult life. In other words, its victims are mostly those who have not as yet reached the period of greatest productivity from the social and economic point of view. They are snatched away before they have even begun their life work and the loss to the country on account of this sacrifice amounts to several billion dollars annually, based upon very conservative estimates as to average period of expectancy and earnings. In addition to this, there is the money loss caused by several years of partial or total disability before death; the cost of medical attention, nursing, institutional treatment and burial expenses. But a mere statement of statistics and material loss fails to convey any adequate idea of the hopes blasted, careers ruined, women widowed, children rendered orphans and homes impoverished.

On the other hand, there is the fact, now well established, that if taken in time, tuberculosis can be cured;—that is, a more or less permanent arrest of the clinical disease can be brought about by encapsulation of the tuberculous focus with scar tissue, if the general hygienic treatment is instituted early enough and continued for a sufficiently long period of time. The essential features to be borne in mind are, therefore, an early diagnosis, the proper management and supervision of the individual case in all its details, and the prevention of relapse by instructing the patient how to avoid those environmental factors that were instrumental in bringing about the original clinical manifestation of active tuberculosis.

Any one who has been engaged in tuberculosis work can recall the countless instances in which a failure to make a diagnosis at an earlier stage has allowed the disease to advance un-

checked; the many instances where the patient was not told the nature of his ailment, or where he was only given very vague statements and indefinite instructions as to the regime to follow; or left without further supervision or guidance, to work out his own salvation, with such general advice as "to live out of doors and rough it", or "to eat plenty of good food and build himself up."

That the practitioner who is liable for errors of omission or commission is not so much to blame as the medical school which produced him, has been emphasized repeatedly. Strong appeals have been made again and again for the establishment of special instruction in tuberculosis. The response has been usually that the curriculum was too crowded: that to allot time for a separate department for one disease would be impossible without sacrificing too much time of other *more important* departments; that the student sees enough tuberculosis in the course on general medicine. However, the cases seen in the course of general medicine and surgery furnish only sporadic and unrelated bits of information. It is true that tuberculosis in its various phases is encountered in this way, but the knowledge thus obtained is not systematic and its relation to the pathology, etiology and diagnosis of tuberculosis is not brought out clearly.

More recently, several of our important medical schools have seen the wisdom of establishing special courses in tuberculosis:—Johns Hopkins, through use of the Phipps Dispensary, The University of Pennsylvania through affiliation with the Phipps Institute, The University of Pittsburgh through the agency of the Anti-Tuberculosis League, and the University of Cincinnati through affiliation with the Municipal Sanatorium. Some such connection was necessary, naturally, in order to insure the requisite amount and kind of clinical material.

For the University of Virginia, this condition was fulfilled by the affiliation of the State Board of Health, through its sanatorium located within easy riding distance from the University. In arranging the course, most of the practical work is thrown into the third year. The class this year was divided into four sections and for one fourth of the college year, each section spends three afternoons a week at the sanatorium, devoting a two-hour

period to practical work. Systematized instruction is given in the physical examination of the chest. The various phases; inspection, palpation, percussion, auscultation, with emphasis on the auscultatory cough, are carefully explained and demonstrated, then practised by the student under supervision. The purposes and outlines of history taking are explained, a scheme for the outline of the history is provided, and, using this as a guide, the students begin taking histories themselves. The relation of family history, contact, predisposition, environment, previous illness, occupations, former exacerbations and types of onset are carefully brought out. The correlation of clinical symptoms, laboratory findings and x-ray findings are then illustrated. The student is present at the fluoroscopic examination and hears the shadows described by the radiologist, who is also at the same time the head of the department of radiology at the University. He studies the x-ray plates singly and stereoscopically and compares what he sees with the interpretation furnished by the radiologist.

After all the separate elements in diagnosis have been worked out separately, the student makes out complete case reports on the basis of his own examinations and presents these before the section for further discussion, criticism and comment.

The difference between childhood and adult tuberculosis is demonstrated by actual cases. There are demonstrations of the tuberculin test, the treatment by means of pneumothorax, various complications such as laryngeal tuberculosis and tuberculous enteritis. Cases with hemorrhage are shown and the methods of treatment explained. Autopsy findings are shown and compared with the findings obtained by the diagnostic methods used before death.

In the final lessons, the student is expected to take the part of the consultant physician, to designate the stage of the disease and to outline the general course of treatment, the management and feeding of the patient as he would in actual practice. He has seen early, moderately advanced and far advanced cases under treatment and been shown the difference in caring for patients in different stages at institutions. To stimulate study and research,

articles from current medical literature are assigned to students for preparation of abstracts and such abstracts are then presented before the section for discussion.

In the fourth year the student sees various forms of tuberculosis in connection with general medicine and surgery and in the special clinical branches. He meets with tuberculosis of the eye, skin, pelvic organs, the kidney, bones and joints, in addition to occasional cases of pulmonary tuberculosis. Toward the end of this year, a course of six lectures is given, more theoretical, covering the whole subject of tuberculosis in the form of a review and paying special attention to such features as the history of tuberculosis during different periods of medicine, its various conceptions, its bacteriology, immunology, the tuberculin reaction, the serum reactions, pathology, the different clinical forms, the different agencies employed and organized in the campaign against tuberculosis, the relation of tuberculosis to general medicine, to public health and to preventive medicine, with a brief summary of the principal statistical facts.

It is only natural at this stage to take stock and ask ourselves what we are accomplishing. As far as can be ascertained, the students themselves are interested and like the work. In fact, their eagerness and enthusiasm have been the greatest inspiration. How much value it will be to them in later life we would not venture to say now. But we do know this: that they know more in a practical way about tuberculosis than the average practitioner does who graduated without such knowledge. The writer is willing to state that they know more about tuberculosis *now*, than he ever did, years after his graduation and even after a hospital service in which cases of tuberculosis constituted a large percentage of the cases in the medical wards. They have shown by actual examination of patients that they can find and elicit the signs of early tuberculosis *accurately* and *definitely* without any assistance: that they can *describe such signs in detail* and note them *accurately* within the *limit of an intercostal space*. The writer is willing to admit that this is more than he could do before he had begun to take up tuberculosis as a specialty, which he did largely because he himself had become a victim, in consequence of the

limitations of medical instruction in tuberculosis. It must be conceded, moreover, that such knowledge, obtained at a time when the mind of the student is still most impressionable, will be so thoroughly grounded in its application, that it will stay with him through life. The first clinical lessons usually sink in deepest, if imparted methodically, clearly, logically, and with proper explanation of phenomena.

SUMMARY.

1. The early diagnosis of tuberculosis being the most essential feature in its treatment, special instruction in this subject should be a part of the required medical curriculum.
2. Such instruction should be both practical and systematic.
3. Such a special department is both workable and feasible.
4. Such special instruction will turn out graduates who are grounded in the diagnosis and treatment of tuberculosis.
5. Such a course will be or can be made interesting.

INFECTIONS OF THE PARANASAL SINUSES.*

By J. WARREN WHITE, A. B., M. D., Norfolk, Va.

In order to have a clear conception of the infections of the paranasal sinuses, it is necessary to bear in mind the relations of the sinuses to the nasal cavities, and I am, therefore, taking up a brief review of the essential points of their relations.

The nose includes two cavities separated by a partition called the nasal septum. Each nasal cavity is divided by the turbinated bones into the superior, middle and inferior meatus. The paranasal sinuses communicate with the nasal cavity. The frontal, maxillary and anterior ethmoidal open into the middle meatus. The posterior and the sphenoidal sinuses open into superior meatus. All of the sinuses are lined with mucous membrane.

An acute inflammation of the mucous membrane lining the sinuses is a common occurrence complicating acute rhinitis from any cause. In the acute conditions, usually all the sinuses are involved to some extent. Influenza, pneumonia and measles are among the infectious diseases most frequently complicated by

suppurative inflammation of the sinuses. Infections of the antrum are frequently caused by an extension of suppuration from the roots of the bicuspid and molar teeth.

The mucous membrane lining the cavities of the sinuses becomes oedematous and swollen when an acute inflammation takes place. The secretions from these cavities are profuse and anything that interferes with drainage from the normal orifices will usually give pain.

In an acute infection of the frontal sinus with retention, there is always a danger of the pus burying through the posterior wall and emptying its contents into the cranial cavity.

In an acute ethmoiditis with retention, the meninges may become infected by the pus burying through the cribriform plate. A retrobulbar neuritis is a frequent complication of an acute ethmoiditis. An inflammatory condition of the nerve, even for a very short time, may mean a complete loss of vision in the eye affected.

In the ordinary cold with neuralgia, there is usually an involvement of the sinuses with slight retention of secretions. In the involvement of the sinuses, the pain is throbbing and may or may not be referred to the sinus affected. The discharges from the frontal, antrum and anterior ethmoidal follow the same course. The posterior ethmoidal and sphenoidal discharges run back into the nasopharynx and are expectorated. There may be a slight elevation of temperature or the temperature may be normal. There is a slight, if any, leucocytosis unless complicated by an involvement of the surrounding tissue.

Transillumination is useful in comparing the sinuses on each side so as to show the extent of the involvement. The roentgen ray is of invaluable assistance when there is the slightest doubt in diagnosis.

The chronic infections of the paranasal sinuses are important because there may be no definite symptoms referable to the nose except a slight nasal discharge which may be more copious in the early morning. There is usually no pain associated with this character of infection. The profession has in recent years come to realize the great importance of focal infection and the many diseases due to foci of infection. I feel, therefore, that one has not done his full duty when making an examination, unless he has made a nasal examination. It may reveal the true source of many nasal

*Read before the Norfolk County Medical Society.

and post-nasal discharges. Distant and obscure symptoms may be traced to sinus supuration. The symptoms are often not characteristic and no reference is made to the nose. We should always diagnose the source of a purulent discharge from the nose.

The nasal septum, a bony and cartilaginous partition, should theoretically be nearly of uniform thickness and vertically placed, so as to divide the nasal cavity in two equal and symmetrical cavities. This, however, is rarely true and we have a variety of deviations and spurs of the septum. These deformities are due either to traumatism or malformation.

I will not attempt to go into the many methods of treating the diseases of the paranasal sinuses except in a general way. I wish first to emphasize the great importance of unobstructive nasal breathing as a prophylactic measure, and also the fact that cases of nasal obstruction arising from deviations and spurs of the septum can only be permanently relieved by operative interference. In deflections of the septum, the turbinates in the enlarged nostril are hypertrophied. The hypertrophy is compensatory and physiologic. This will usually correct itself after the deflection is relieved. There are still some who advocate the frequent cauterization or removal of these hypertrophied turbinates for the purpose of relieving nasal obstruction. After these measures, the patient has scar tissue instead of mucous membrane, which causes frequent scabbing and other most disagreeable symptoms and, besides, the obstruction is rarely relieved. I think it most important that these deformed septums be resected, as no treatment can be carried out successfully with the normal orifices of the sinuses completely or partially closed during every attack of acute rhinitis.

Personally, I think it a mistake to temporize by sawing off spurs from the septum with an idea of relieving obstruction. If the deflection causes nasal obstruction, a complete submucous resection should be done. Better drainage and ventilation will be given the sinuses and unobstructive nasal breathing will give the greatest comfort to the patient. Nasal infections will certainly have a more favorable prognosis when such conditions exist. The respiratory is probably first in importance of the several functions of the nose.

I will report a few cases to further emphasize the points I have endeavored to bring out.

A man, age thirty, was referred to me by his physician with an idea that there was some focal infection. The paranasal sinuses were suspected because the patient gave a history of two nasal operations and a piece of bone was removed each time. I found the deviation high up to the right and interfering with drainage from the right frontal. The left nostril was almost completely blocked due to adhesions and inflammatory tissue, the result of an attempt to remove a spur on the left side near the floor. The drainage from the left antrum was obstructed and the roentgen plate showed the left antrum involved. A complete submucous resection was done thereby leaving, instead of a bony and cartilaginous septum, a partition formed by two flaps of mucous membrane, thus giving unobstructive nasal breathing on each side and drainage from the left antrum.

A young man, age twenty, was referred to me with a history of albuminuria for several years. He had learned to test his urine for albumen and found that work to any extent, either mental or physical, increased the amount of albumen, so he had become very despondent about himself. At the time I saw him he was very thin and emaciated, but said that he had recently lost in weight. On examination, I found the septum thickened and deviated with almost complete nasal obstruction. I did a submucous resection of the septum and also a tonsillectomy. Four months after the operation he has had no return of the albumen and is physically in good condition.

A man, age forty-five, was referred to me by a dentist, because of an infected antrum due to a diseased tooth. The antrum was opened intranasally but drainage was unsatisfactory on account of a large spur blocking the opening. After several weeks of treatment, I did a resection of the septum and no further treatment was required as the drainage was not blocked.

A man, age thirty-five, was referred to me with a considerable cough and a slight rise of temperature in the afternoon. The physician thought there must be some focal infection as he could find nothing after a most thorough physical examination. There was pus in the middle meatus and a slight tenderness over the right frontal. The intranasal operation was done and suction applied, removing con-

siderable pus. Suction was applied daily and in ten days there was complete recovery. The intranasal route is an ideal method for the frontal sinus operation. This method, of course, is not applicable in all cases.

A young woman, school teacher, age twenty-five, came to me. She had consulted several internists. They had given her a most thorough examination but no one had made an intranasal examination. I found pus coming from the left frontal and the anterior ethmoids. The drainage was blocked by a thickened and deviated septum.

A man was referred to me on account of interference in vision of right eye. He gave a history of a recent attack of acute rhinitis. Vision was 10/200 in right eye and 20/20 in left eye. On examination I found pus coming from the ethmoid cells. The intranasal operation was done and suction was applied daily. In ten days the vision was 20/20 in right eye.

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PEDIATRIC CLINICS:—CLINICAL AND ADMINISTRATIVE MANAGEMENT.*

By SAMUEL NEWMAN, M. D., Danville, Va.

The modern Pediatric Clinic as a public health activity is the result of several evolutionary phases. It first began with the simple milk station which had as its sole aim the distribution of pure cow's milk. A further development was marked by the connection with the milk station of a trained nurse who furnished directions for the home modification of milk.

An advanced step in the development of the Pediatric Clinic is the association with it of a physician who possesses specialized knowledge in the theory and practice of infant feeding and a specially qualified nurse who is to carry out in detail the feeding scheme of the physician. The best developed clinics of this class take the responsibility for the infant's welfare in its every relation and aspect from the day of its very birth up to a certain definitely fixed age of the child.

The most perfect example of the latter type of clinic is the Berwind Maternity and Infant Clinic, located in the heart of the New York East Side. A brief outline of its organization and clinical management will be given in order

that those of us who are interested in this subject may have an idea of the *model* in this field.

The care of the infant at the Berwind Clinic begins—as it should—long before it is born. The applicants for the benefits of the clinic are of the class entitled to free treatment. Aside from the thorough examination of the prospective mother, a complete examination by experts is made of the social, economic, racial and eugenic background of the prospective infant. The privileges of the clinic are granted only after an agreement on the part of the mother to allow the clinic only to manage the nutritional life of the infant for the first year of its life. The clinic deals only with the nutrition of the child and with all the problems arising directly from it.

When the baby arrives, its weight and measurements are recorded. After two weeks the mother is expected to bring her baby weekly until one year old for weighing, measurement, and general examination. All feeding problems are discussed and settled at those weekly conferences. Failure to report to the clinic for even a single weekly examination is immediately checked up by the office force and a nurse visits the infant and weighs, measures and examines it. The records are thus kept complete in every detail.

The outstanding features of a clinic of that type may be summarized thus:—

(a) The records of the clinic are most complete and form a real repository of important data for the social and clinical investigator.

(b) Various theories of infant feeding can be thoroughly tested out and their clinical applications determined and compared with one another.

(c) Erroneous notions concerning the care of infants both on the part of physicians and mothers, can be combated in a very effective way. This statement will be illustrated later.

I shall now mention briefly the controlling clinical ideas of the Berwind Clinic. The clinic is not controlled by any sectarian system of medicine and is not given to fads and experimentation. Its clinical head is the attending pediatrician of the Mt. Sinai Hospital.

FIRST.—The overwhelming majority of mothers *can* feed their children. Too often does the physician allow himself to be persuaded by the nursing mother that her milk is *failing*, is *too rich* or *too poor*. In many instances, the

*Read at the meeting of the South Piedmont (Va.) Medical Society, in South Boston, November 23, 1920.

physician himself is the source of such a notion. While the existence of such a condition as failing milk, too rich or too poor milk, is not denied, yet the number of such cases can be reduced to a negligible minimum. The truth of this statement is being demonstrated in that clinic in such a way:—A mother comes to the clinic for a formula stating that her milk has been failing for the last month or so. The mother is kept until the nursing hour and the infant is weighed *before* and *after* nursing. The difference in weight represents, in most cases, the normal amount of milk the infant needs and the mother is thus convinced that her apprehension is unfounded. In a similar way, notions of poor or too rich milk are combated by a demonstration of the graphic weight curve to the mother. Only loss of weight for a period of two weeks or stationary weight for a period of three weeks suggests the necessity of supplementary feeding.

SECOND.—When artificial feeding becomes necessary, the average pure cow's milk meets almost every condition—including cases of rickets, marasmus, digestive and infectious diarrheas. The average baby is fed with a simple dilution of cow's milk with the addition of table sugar. Most of the infectious and digestive disorders are managed by a manipulation of the simple cow's milk formula with the substitution of one kind of sugar for another. Complex preparations of milk, as well as any proprietary foods, have no place in that clinic. During my residence there in the summer months, when clinical material was most abundant, Finkelstein's protein milk had to be resorted to in very few instances.

THIRD.—DRUG ADMINISTRATION. The principle "Never to prescribe a drug without a sufficient and good reason," enunciated by pediatricians, is the ruling faith at the Berwind Clinic. In babies with definite clinical and pathological conditions, the *diet* received the first and last attention.

In conducting a Child Health Centre in Danville, Va., under the management of the local Health Department, the Berwind Clinic in New York City was taken as the *model*. We used a uniform sheet for the history of the mother and child. On the whole, a sufficient number of cases attended the clinic regularly and continuously to justify the claim that responsibility for the nutritional and clinical

management of these rests entirely with the clinic. The number and variety of cases warrants also a classification into several clinical groups, ranging from the simple undernourished to the extreme marasmic group. Time will not permit me to describe in great detail the management of many cases in the different groups. By way of illustration, I shall cite the management of only one case in each group as gathered from the records of the cases. By way of introduction I wish to say a word concerning the equipment and personnel of the clinic.

The equipment consists of a weighing scale; a number of the usual eight ounce nursing bottles; tin boxes with a wire rack to deliver six or seven bottles for a whole day's feeding; Robinson's prepared barley flour; table sugar, milk sugar, and Mead's Dextri-Maltose No. 1. Occasionally we would have to use a preparation for *dextrinizing* gruels. The personnel consists of a physician and a highly efficient nurse specially trained in child welfare work.

The cases I shall divide into five groups.

GROUP I.—UNDERNOURISHED CHILDREN. *Illustrative Case*: Mother is 43 years old. Weight of child at birth, 7.5 pounds. Weight on first examination at the clinic, 10.5 pounds; age of child, six months; therefore 5.5 pounds underweight. Maternal nursing stopped when baby was four months. Her reason for discontinuing nursing was her believing that her milk was bad. The artificial food consisted first of condensed milk, later of malted milk, and last of peptonized milk. The mother was advised to resume four maternal feedings, supplementing them with the bottle, and to give two feedings with the bottle alone, making six feedings a day with an interval of three hours between feedings. The record shows a weekly gain of weight. At nine months the baby receives only five bottles and its weight is 19 pounds. The milk formula consists of cow's milk, lactose and plain boiled water.

GROUP II.—ARTIFICIALLY-FED CHILDREN IN GENERAL. In adjusting a formula for any child, no matter what its age, we first take its weight and start out with a formula very much below the caloric requirement of a baby for that age and weight. At the end of one week the child is weighed and we see if it lost or gained in weight; if lost, the formula is slightly increased; if the gain represents four

ounces, no change in formula is made for one more week. The principle is not to change formulas too often and to give each at least one weekly trial. The feeding interval is *never* less than three hours and the number of bottles rarely over six. Caloric feeding is not a safe guide, but when the first adventure into artificial feedings becomes necessary it is good to have the caloric requirement per pound of body weight in mind in order to start considerably *below* it. Whole cow's milk is always used, the diluent being plain boiled water or barley water. Either plain or lactose sugar is used, occasionally Mead's Dextri-Maltose, when sugars do not agree well.

Illustrative Case: Infant one month old and 6.25 pounds at time of examination. Weight at birth not known. Lost its mother and was handled by several people. Very emaciated; skin wrinkled, "old man" appearance. With double catheter I washed out its lower intestines with warm saline. For 12 hours I ordered only boiled water; for the next 24 hours weak barley water; the following day skimmed milk well diluted and with no sugar, gradually working up by the end of three weeks to 11 ounces of whole milk, 17 ounces of water, and 1 ounce of lactose. The gain in weight for the three weeks was 11 ounces. The caloric value of the last formula is 48 per pound of weight, and on this formula the baby gained one pound in the next three weeks, after which the formula was again increased.

GROUP III.—RICKETS. *Illustrative Case:*—Child five and one-half months old and 11.25 pounds on first examination. Weight at birth 8 pounds; therefore 5.5 pounds underweight. Maternal nursing discontinued because mother was told that her milk did not agree with the child. Many complicated processes of preparing food and all sorts of proprietary foods were tried with very poor results. The child is anemic, extremely undernourished and with wide-open fontanels. The ends of the long bones are thickened, general sweating profuse and constipation most obstinate. Child had to have a daily enema. In its food, which then consisted of peptonized milk, the child received daily four teaspoonfuls of milk of magnesia and some tablets of lactic acid bacilli. After a colonic irrigation of warm saline, I put the child at once on a skimmed milk formula with Mead's Dextri-Maltose, gradually

working up to 27 ounces of whole milk, 8 ounces of barley water and 1 ounce of Dextri-Maltose by the end of 8 months, when its weight was 15.75 pounds—a gain of 4.5 pounds in ten weeks! The rickety condition and constipation is being combated with fruit juices with good results, the baby having now a normal evacuation of its bowels once a day.

GROUP IV.—MARASMUS. *Illustrative Case:* Child 8 months old; 11 pounds at time of first examination. Breast fed until 6 months, when its weight was 17 pounds. Mother had to go to work and the care of the baby was entrusted to a colored girl. Baby presented the most extreme picture of emaciation and "old man" expression. Excoriations and bed sores covered the napkin region and a hemorrhagic purpura the rest of the body. Temperature per rectum was 104 and examination of chest revealed a broncho-pneumonia. This apparently hopeless case was shown to several physicians at the Danville General Hospital and presented a challenge to the civic pride of the community. It was thought that only a wet-nurse could offer the baby a fighting chance, but none could be secured. I ordered a colonic irrigation with several quarts of warm saline and carried the child through a graduated series of formulae from plain boiled water to the present formula, which consists of 27 ounces of whole milk, 9 ounces of thickened barley water and one ounce of table sugar. Only four weeks after its most extreme condition the child consumes a normal quantity of food and already borders on the normal. However, other cases of marasmus had to be managed with dextrinized gruels or whole milk with Mead's Dextri-Maltose.

GROUP V.—GASTRO-INTESTINAL UPSETS SECONDARY TO COLDS, BRONCHITIS, OR BRONCHOPNEUMONIA. Many of these cases were brought to clinic. In all these the prime consideration was the *diet*, the gradual weakening and gradual strengthening of the artificial food formula. Nature was allowed to take care of the primary trouble. The maxim "Never prescribe a drug without a good and sufficient reason," was followed very tenaciously. The good and sufficient reason was never the *ill* baby but always the *well* mother, which occasionally prevailed upon me to prescribe the conventional medicine with a resulting upset of the baby's stomach.

A study of the records of the Child Health Center in Danville, Va., points to the following conclusions:—

FIRST.—More mothers can nurse their babies than the laity and even some physicians suppose.

SECOND.—The structure of the artificial food formula is very simple, consisting of whole cow's milk with plain or barley water as diluent and either plain or lactose sugar or Mead's Dextri-Maltose. The addition of lime water practiced by many is based on three errors. The first is the belief that human milk is alkaline whereas it is faintly acid to phenolphthalein. The second error is the presumption that the acidity of cow's milk is harmful; we now know that fairly large amounts of lactic acid may even be beneficial. The third error is that lime is necessary in order to cause a fine subdivision of the casein of cow's milk in the infant's stomach. This is not very important because proteolysis in the stomach is relatively unimportant compared to the tryptic digestion in the small intestine.

THIRD.—Practically every case of disordered nutrition from the simpler to the marasmic types can be fed with cow's milk, its modification consisting only of simple dilution with the addition of the proper amount of sugar or Dextri-Maltose. Some cases of marasmus can be managed with *dextrinized* gruels.

FOURTH.—*Diet* is the corner stone of the baby's well-being under every condition of its life; upon it—*diet*—should the undivided attention of the physician be focused. Drugs do not occupy the seat of honor in pediatric practice.

THE SPECIAL SOCIETY—ITS PURPOSES AND POSSIBILITIES.*

By HUNTER H. McGUIRE, M. D., F. A. C. S., Winchester Va.

First, I want to express my appreciation for the honor conferred upon me by the small but earnest group of workers who met in Petersburg, and who are responsible for the organization of this Society. To be chosen the first presiding officer of an association of my fellow Virginians who are laboring in a special field of medicine, and to be trusted with the guidance of a society in whose membership are men who have won for themselves enviable reputa-

tions in ophthalmology and oto-laryngology, is more than I deserve.

I can only cherish the hope that, by the inspiration which must inevitably result from association with men who have made good and by united effort on the part of those of us who have thought it wise to set in motion the machinery necessary for the accomplishment of our purposes, this Society will, in due time, become what it is destined to be—an honor to the State and an efficient working body of men of scientific attainments.

Before going into its purposes and possibilities, please let me remind you that the Society is, as yet, only passing through the stage of its infancy. It must be nourished, it must be fondled, it must be handled carefully, and its growth and development must not be retarded by undue criticism and harsh judgment. The stage of adolescence and full maturity cannot be reached in a day or a year. It requires time and patience and determination to develop a really scientific organization and only by co-operative effort and enthusiastic purpose is it possible to build up and establish on a firm foundation, an association which will not lie dormant, but will ever continue to function.

Now what are some of the purposes we should keep in mind and what should be the aims and aspirations of this organization?

The distinguished mother of all the special societies in this country, and possibly, with one exception, the oldest organization of its character in the world, The American Ophthalmological Society has, in its constitution and by-laws, a very significant phrase and it reads thus: "The Purpose of this Society shall be the advancement of Ophthalmic Science and Art." This brief but forceful statement, it seems to me, embraces what should be the attitude of this organization with respect to the sciences of ophthalmology and oto-laryngology.

We should take particular pride in the fact that the specialties which we represent have made wonderful and rapid advances, probably as many, if not more, than the other branches of medicine, but, at the same time, we must not fail to recognize that many, many problems are, as yet, unsolved and that as an organization of scientific men it becomes our imperative duty to make an honest effort to shed some light in the dark spots and to evolve from the many questions, which now remain in obscurity, basic principles upon which true conclu-

*President's address before the Virginia Society of Oto-Laryngology and Ophthalmology, in Richmond, February 3, 1921.

sions may be founded. This can only be accomplished by intensive study of the problems which confront us and by a united effort to solve them.

May I venture to offer some suggestions for the conduct of this society and for the fulfillment of its purposes?

In the first place, it seems to me that the character of papers presented for our consideration and discussion should be of a very different type from those which we, at times, have the opportunity to read in a general medical association. The general practitioner is not interested in the scientific phases of ophthalmology and oto-laryngology. He has neither the time nor the inclination to study their problems and he is only impressed and helped by listening to a paper which may contain something of practical value to him in his daily work. I say this with absolutely no disrespect to him or his knowledge, for he can no more be expected to study our problems, than we, as specialists, should undertake the study of the subjects in which he is peculiarly interested.

Our object should be the elucidation of the unsolved questions which pertain to our specialty and an organization which has this as its fixed purpose will accomplish something worth while.

With regard to the nature of the scientific communications made to the society, it occurs to me, we will do well to keep in mind the standards required by the Section on Ophthalmology of the American Medical Association, to wit:

(1) They shall contain and establish positively new facts, modes of practice, or principles of real value; or

(2) They shall embody the results of well devised, original, experimental researches; or

(3) They shall present so complete a review of the facts on any particular subject as to enable the writer to deduct therefrom legitimate conclusions of importance.

Nothing will be more instructive and will be more conducive to intensive study than the adoption of a well conducted symposium at each meeting of the society. A systematic and thorough analysis of the various phases of any subject, by men of different viewpoints, has its advantages and, inevitably, leads to more logical conclusions than would have otherwise been obtained.

The submission of case reports is an important and desirable feature in every special society. Nothing, however, detracts more from the value of a case report than the lack of sufficient data upon which to base definite deductions. The reporter should not draw inferences until he has well weighed all of the evidence in the case and, unless full details are presented, which in themselves serve to point conclusively to a rational deduction, the record fails to be convincing. While the report of a series of cases in which the results of treatment have been uniformly successful is always interesting, from the viewpoint of a scientific society it is just as important to report failures as successes. This enables the organization to place a true value upon any theory which may have been advanced by the writer of the report as the result of his observations.

The attractiveness and value of every scientific program is enhanced and its points illumined by an animated discussion of the questions under consideration. There are many brilliant men in our medical associations who, endowed with the power of oratory and the gift of expression, together with a profound knowledge of the subject under discussion, can, without preparation, impart their knowledge to others in a convincing and attractive manner. The most profitable discussion, however, is the result of an exhaustive pre-sessional study of the subject in question and an analysis based upon this study. This can best be obtained by a comprehensive consideration of the program before the meeting of the society.

The plan adopted by the Section on Ophthalmology of the American Medical Association, with which you are all familiar, of printing a pre-sessional volume, containing in full all the papers to be presented, is an ideal one, but the expense of such an undertaking would be too great for a small organization. In lieu of this, it seems to me, it would be a wise provision to require each author to furnish a brief abstract of his communication and that this abstract, with the title of the paper, be made a part of the program. By adopting such a scheme, those who desire to discuss papers will be in a position to do it more intelligently than if they had no knowledge of the subject about which the essayist is to speak.

I am sure you will agree with me that the success of any organization depends largely

upon the loyalty of its members and their willingness to attend its meetings. The man who habitually absents himself from medical meetings without valid excuse is not only a discredit to the organization with which he is affiliated but places himself in an unenviable light in the estimation of his associates. It is an incontrovertible fact that the busiest men in the profession and those who have done so much to elevate the standards of ophthalmology and oto-laryngology let nothing interfere with their annual pilgrimages to medical meetings, and attendance upon these gatherings they count as a privilege rather than a duty. The man who stays at home, when his colleagues have assembled to interchange ideas, to study with other men the problems of their life's work, to correlate and put into practice principles of real value, and to endeavor to uplift and to advance the profession they represent, rarely acquires that breadth of vision and that well developed intellectual capacity which go to make up the ideal physician. If he is content to rest upon his laurels, to rely exclusively upon his own judgment, and to sit idly by while his fellow workers assume the responsibilities and shoulder the burdens which should be his, he cannot expect to attain that position of honor in the profession to which he should be entitled or to hold the confidence of the community in which he practices.

The attitude of the public with respect to the efficiency of its medical men has undergone radical changes in recent years. Medicine is no longer a mysterious and occult science and, fortunately for us, the public mind has been enlightened far beyond our expectations with regard to the many phases of its activity.

Our patients demand, and justly so, that we keep abreast of the times and that, as the science and art of our respective specialties advance, we too should go forward and give to suffering humanity the benefit of our knowledge and our experience.

I know of no one agency which is capable of developing, to a greater degree, that desire for advancement and that insatiable thirst for a knowledge which will develop the best that is in us, than a scientifically conducted medical association. It creates and develops in us the incentive for harder work, for higher ideals and, more than this, by bringing together and uniting with bonds which cannot

be broken men of like aspirations working together in a common cause, it becomes a force which must be reckoned with and an influence for good in the State and in the Nation.

And so, my friends and my fellow workers, with your co-operation and the strength which can only come from men who are determined to devote their time and their talent to the accomplishment of their purposes, we venture upon this new undertaking with confidence and with hope, not unconscious of our imperfections, but strong in the faith that we can help, in our special sphere of activity, to uphold the traditions which have given to Virginia so much honor and distinction.

THE PHILOSOPHY OF MEDICAL DIAGNOSIS.*

By WARREN T. VAUGHAN, M. D., Richmond, Va.

The primary function of each member of the medical profession is and should be the prevention and cure of disease. This is true whether the physician be in a clinical branch of medicine, in direct contact with the patient or whether he be in the laboratory, working towards the improvement of existing diagnostic or therapeutic measures. But, before one can successfully treat any case of illness, it is essential that a correct as well as a complete diagnosis be made.

In the diagnosis of disease in internal medicine, I have frequently clarified the situation in my own mind by comparing the process to that employed by a detective in the execution of his work. Medical diagnosis is but a detective game. The patient presents himself to the physician with a story of having lost something. He has lost his sense of well-being, he has lost his health and he asks you to discover when and where he lost it, why he lost it and how he may recover it. He is able to give you some information, a certain number of clues, and with these as a basis the search must be begun.

When a detective is placed upon a special case, does he proceed at once to the site of the robbery and start there his search for clues? Not as a rule. First he goes into the history of the case with notebook in hand, for he does not trust his memory; he asks numerous relevant and many apparently irrelevant questions

*Read before The Southside Virginia Medical Association, December 14, 1920.

of the complainant. He enquires of much before the date given as the time of the loss. He searches for motives, for predisposing causes. Frequently, it is necessary to go into the past life of the individual and to question in great detail regarding his associations. In other words, the history of the case is the first and one of the most important subjects for study and this must be followed out until all possible sources of information have been exhausted.

Next, a general survey must be made. All facts are to be ascertained. All available data must be accumulated. After the complainant has told all he knows, the detective will proceed to examine the territory where the loss occurred. He will make a complete examination. He will pay as much attention to the apparently unimportant as to the apparently extremely significant phenomena. At this stage he is not stressing the important clues but is endeavoring to maintain suspended judgment and to note down all facts so that later he may study them in greater detail at leisure, and decide as to the relative values of each.

We are all acquainted with the story of Sherlock Holmes. Remember how Doctor Watson invariably made an incorrect diagnosis. This was because he lacked perspective and stressed unimportant bits of evidence.

Even the best detectives will overlook some clues. It is often necessary to go over the ground a second and even a third time. Frequently, special leads will turn up and these should all be followed to the end. Sometimes the detective finds a condition which he does not consider himself competent to pass upon. He may find finger prints on a safe. He wastes little time studying these, but calls in a fingerprint expert. At times it becomes necessary to call in criminologists or other specialists.

As I have previously stated, it is extremely important that the investigator maintain throughout the period of his inquiry a state of suspended judgment. After he has acquired all available data, he will proceed to a critical analysis and will determine the important facts most intimately connected with the case. After having dissected the evidence, he will piece it together and will construct an hypothesis to explain all of the facts.

Perhaps I can better emphasize the importance of suspended judgment by the following analogy. If you were a stranger in America,

unacquainted with the army uniform and had been walking about in one of the great army camps during the war, you would have observed that all of the uniforms, both those of officers and enlisted men were the same. They look practically identical. Passing them hurriedly on the street, you would not notice the small metal ornament on the shoulder which alone distinguishes the general from the enlisted man. Passing them, one after another, you would be unable to decide as to relative importance. But, if later, you were to wander out onto the parade ground and there saw the troops in review you would easily recognize from the orderly arrangement of individuals into groups and of small groups into large groups that the individual of chief importance was the one riding at the head of the entire procession. It is only after the evidence has been sorted out by analytical methods and rearranged into co-ordinated groups that relative values appear.

All that I have said of the detective's routine holds equally well for the methods to be followed by the diagnostician.

When the diagnostician has formulated his explanation he has not yet reached the stage of diagnosis but only that of hypothesis. It is true that, from the important clues, he has hypothesized an explanation for the patient's malady. This is not the diagnosis. He may have made some error in his reasoning. Far too often medical men are content to stop at this point and to assume that the hypothesis is the final diagnosis. Much more should be done. The hypothesis must be tested and, if it is found to fail in the explanation of any single phenomenon or if it is found to disagree with certain observations, it must be discarded. On the basis of the discarded hypothesis a new one will then be selected and eventually one will be discovered which will fulfill all of the requirements and which may be designated the diagnosis.

Not all detectives are good detectives. Ability to diagnose disease depends on many personal attributes. A few of the important ones may be mentioned. First the examiner must be blessed with strong curiosity. As Barker has well said, feeble curiosity is the cause of too many snap-shot diagnoses and errors in diagnosis. One must not rest satisfied until all phenomena have been satisfactorily explained. The most insignificant variation from

normal in any of the body organs must be studied in detail.

Again, the examiner must be able to recognize a problem in the case before him. If a patient presents himself with intractable hic-cough, he must not be treated with palliative measures alone but the physician must recognize that there is a problem for diagnosis. Is the disease due to pathology in the stomach: is it due to a localized peritonitis; or is it even due to impending uremia? Is it an instance of the epidemic hiccough which has been reported as accompanying epidemics of lethargic encephalitis?

One must possess sufficient perseverance to follow out all leads and sufficient judgment to distinguish the important from the unimportant.

Past experience with similar conditions is of great aid. Other qualifications being equal, the man who has seen the greater amount of clinical material is the better qualified to make a diagnosis. Fortunately, in medicine, we may profit by the experience of others. A good preceptor is of inestimable value. The individual who keeps abreast of current medical literature is adding to his own experience by reviewing and assimilating the experience of others.

Barker gives the successive steps in medical diagnosis as, first, the recognition of the presence of a problem; second, the accumulation of data which may be used in the explanation of the problem; and third, a consideration, or pondering of the data; followed by, fourth, elaboration by reasoning, of the various phases of the problem. Fifth, the suggestions arising from this elaboration must be tested out for accuracy and for adaptability.

Let me cite one or two cases which will serve as examples of some of the points emphasized in the foregoing discussion.

A middle aged patient, male, presented himself for diagnosis. His story was briefly that of intermittent recurrent pain in both shoulders, coming at irregular times, not definitely localized, and not affected by any form of treatment. He also complained of tenseness over the anterior surface of the left thigh. He described this as a sensation similar to that occurring after painting the skin with iodine. Finally, he had a feeling of mental oppression, a sense of pressure on the brain. In these complaints there was a suggestion of

what we unfortunately call the "neurotic element," but there was no evidence whatever of any psychopathic state. The patient was a rational, useful member of society.

A complete physical and laboratory examination was made. There was no limitation of motion in any of the joints of the upper extremities and there was no tenderness on motion or on pressure. There was just sufficient discomfort on elevating the arm to cause a suspicion of subdeltoid bursitis. Roentgenograms were made of both shoulder joints and it was found that, while the right was negative, the left showed the characteristic calcification of a subdeltoid bursitis. The diagnosis of bilateral subdeltoid bursitis was made.

But this by no means completed the case. Why did he have his bursitis? Search was instituted for some focus of infection. None was found. Roentgenograms of the teeth had been negative. The patient had given no definite gastro-intestinal history of disease, but on going over the symptomatology a second time, he remembered that several years before, he had had symptoms very suggestive of recurrent attacks of acute appendicitis. Barium studies were made and the appendix and caecum were found to be immovable. The assumption is that the focus of infection lies in a diseased appendix. The patient has not as yet been operated upon but I would emphasize the fact that we have not even yet reached the stage of diagnosis. We are still dealing with hypothesis. The final diagnosis will not have been completed until after we have followed the results of post-operative treatment.

But we have not explained all of the patient's symptoms. Why has he this feeling of tenseness in the left thigh? Examination showed a moderately enlarged left internal inguinal ring with impulse on coughing. The patient incidentally suggested that in driving a Ford he uses the left leg a great deal. As regards the mental oppression, we hypothecate that the pathology previously described, together with the fact that the patient is a physician working constantly and worrying about his condition, is sufficient to explain the mental symptoms.

This case emphasizes perhaps chiefly the importance of strong curiosity. The diagnosis of bursitis is insufficient. One must find the cause of this condition if possible and then if the hypothesis does not explain all symp-

toms it must be either discarded or added to. As a rule it is safer to discard the hypothesis and secure another which unaided will explain all symptoms.

A second case is of some interest as showing a lack of perseverance. This time the lack was on the part of the patient, but this is by no means the rule. The patient came in for examination a year and a half ago. He had certain gastric symptoms suggesting organic disease of the stomach. The usual routine examination was made together with special studies of the gastro-intestinal tract including barium studies. No pathology was found but, in view of the character of the symptoms, the patient was advised to return in four weeks' time for another barium examination. He did not return, and was not seen until a year and a half later. Barium studies at this time showed the presence of an inoperable carcinoma of the stomach. If this patient had been fluoroscoped every two months during the interval, there would have been some time in the eighteen months when the diagnosis would have been made and at a time when the condition would probably have been still operable.

I would like to say just a word with regard to the present day trend toward specialism in medicine. I like to think of all physicians as specialists in their fields. The general practitioner, the family physician, is a specialist as much as is the neurologist or the oto-laryngologist. He has those qualifications, particularly the personal qualifications, which will make him successful in his chosen field. Others eminently successful in their specialties as surgeon, internist, or what not, should they enter the field of general medicine, would in many instances find themselves ill adapted and unsuccessful.

The general practitioner comes into more intimate personal relationship with his patients than does any other specialist. His knowledge of the patient's mental make-up has been acquired through years of contact and observation. He is possessed of a type of information obtained only with great difficulty by the individual whose only contact with the patient is in the office.

Sir James MacKenzie, who is to my mind the greatest living family physician, has delineated very clearly the character of scientific knowledge that can be contributed by the general practitioner and by him alone.

He points out that as a rule the patient suffering from chronic disease first presents himself to the physician complaining of subjective symptoms only, and at a time when no pathologic physical signs can be detected. The average medical student fresh from the hospital has been trained to recognize physical signs and is in the habit of concluding that those patients, in whom he cannot find evidence of disease by physical examination, are not suffering from somatic disease.

On the contrary, the majority of individuals attending the general practitioner do not present abnormal physical signs. It is he alone who has the opportunity of studying chronic disease in its incipency, at a stage where a permanent cure may most be hoped for. Moreover, he alone usually follows disease in one individual from its beginning until its final termination. His knowledge of the individual case is a "moving picture" acquaintance, as contrasted with the "single exposure" viewpoint possessed by the consultant. It is on the man who sees chronic disease in its incipency that we must rely for future improvements in our methods of early diagnosis and curative treatment.

This task is by no means a simple one. And yet, with the development of the so-called functional methods of examination, it is becoming less difficult. During the last quarter of the nineteenth century, clinical medicine was dominated by the new observations made in *structural pathology*. During the last two decades we have passed onward, with the development of tests of function, to a study of *functional pathology*.

Instead of viewing with dismay the extensively damaged kidney at autopsy, and wondering "how could he live so long?" we now, on the living, test the efficiency of the kidney, while enquiring to ourselves, "how long can he live?" No longer, "how much tissue is destroyed?" but "how much good tissue remains?"

We already possess many valuable functional tests, applicable to different organs of the body. One of the oldest used is that employed by the psychiatrist—the test of mental function. Functional cardiac tests were invaluable in the army. The pulse rate and blood pressure responses to exertion are functional. Palpitation may be included. Gastric test meals measure the secretory or digestive and the motor

function of the stomach. We possess similar tests for pancreatic function. Examination with the opaque meal is a functional test in so far as increased or decreased motility of the stomach and intestines is observed. A functional test for hepatic cirrhosis, little used but often of great value, is Goodpasture's fibrinolysin test. Tests of renal function have become so well known that they require but mention.

And the list is by no means complete.

The main endeavor today is to develop functional tests so delicate that they will warn us of the earliest deviation from normal. When this is done, much will have been accomplished.

St. Elizabeth's Hospital.

FRACTURES OF THE FOREARM, INCLUDING INJURIES TO THE ELBOW AND WRIST JOINTS.*

By EDWARD E. FEILD, M. D., F. A. C. S., Norfolk, Va.

Fractures of the upper extremity are probably more numerous than those of all the other parts of the system put together, and the radius is broken more often than any other bone. In its upper part, it is probably never broken except by direct violence or by a fall on the hand, and then, at or below the neck. Injuries to the upper part of the ulna are usually confined to the olecranon or coronoid processes, and are caused by direct force, although the former may result from muscular contraction. Fractures of the shafts of these bones are rare, except at or near the wrist, and usually are caused by direct trauma, in which instance both bones are involved, as a rule, and the fracture often compound.

Fracture of the coronoid process is extremely rare, except in a crushing blow to the elbow joint, in which event the olecranon and the radial head would in all probability be involved, and the wound compound.

Fracture of the olecranon, on the other hand, is not uncommon, and may occur from direct injury or from contraction of the triceps muscle. The fragments are often but not always separated. This injury may be treated with a straight splint reaching from the shoulder to the fingers and well padded so that the elbow is at an angle of fifteen degrees and the hand in supination, provided the frag-

ments can be placed in close apposition and held in position by strips of adhesive tape. Unless there is some contraindication, if the fragments are widely separated, they should be sutured together with kangaroo tendon. This should be done within a few hours after the injury or deferred for a week or ten days. If the injury is compound, suturing should be done at once, and the arm placed on the straight splint as described above. If there is no displacement of the fragments, the arm may be put up on the angular splint and adhesive tape used to retain the position.

In wiring or suturing the fragments, be sure not to let the suture go far enough to enter the joint.

Fractures of the lower part of the ulna are generally confined to the styloid process and are rare except with some other injury to the wrist. Fractures of the lower part of the radius, on the other hand, are very frequent and usually involve the wrist joint. Fractures of the wrist are among the most numerous and interesting of all injuries.

Cotton classifies them as follows:—

- (a) Colles' fracture.
- (b) Reversed Colles'.
- (c) Fractures of both bones, low.
- (d) Epiphyseal separation.
- (e) Green stick fracture of both bones.
- (f) Fracture of the ulnar styloid alone.

Carpal fractures:—

- (a) Fractures of the scaphoid bone.
- (b) Scaphoid fracture with semilunar luxation.
- (c) Fracture of other carpal bones.

Fractures about the wrist are usually accompanied by luxation of other bones.

COLLES' FRACTURE.—Before describing Colles' fracture, it may be well to call attention to the relative position of the radial and ulnar styloids, that of the radius being normally about a quarter of an inch lower than that of the ulna. In pronation the head of the ulna is felt, while in supination the styloid is felt. The relative position of the two styloids is one of the most important features in the diagnosis of injuries of the wrist.

In Colles' fracture the radius is broken at some point, not higher than one and a half inches above the wrist, with a dislocation of the wrist backward on the forearm. The break is entirely through the bone and may be transverse or diagonal, according to the direction

*Read before the Southside Virginia Medical Association, at Suffolk, Va., December 14th, 1920.

from which the fracturing force is received. The relative position of the styloids will be altered, whether the ulnar styloid is broken or not, and the wrist will be widened. The backward luxation of the wrist produces the "silver fork" deformity. In "Reversed Colles," the hand is luxated forward and upward. In no other wrist fracture is the relation between them disturbed, except in fracture of the radial styloid alone. These styloids can practically always be felt, even with great swelling of the wrist. "Barton's fracture" is a splitting off of the posterior articular of the radius, commencing from a quarter of an inch above the lower end and extending diagonally down into the joint, with a backward dislocation of the wrist. "Reversed Barton's," on the contrary, is a splitting off of the anterior radial surface, with a forward dislocation. Epiphyseal separation is said to resemble Colles' fracture in its symptoms. Personally, I have never seen a case. By careful attention to the foregoing details, the above fractures can readily be recognized, although the diagnosis should be verified by the x-ray. If the x-ray is used only once, it is better to defer the picture until after the dressing, so that it may show whether or not the fragments have been placed in the proper apposition. Colles' fracture is caused usually by a fall on the palm of the hand, although any direct violence, such as cranking an automobile, may act as a cause. There is often impaction of the fragments and rotation or other displacement of the hand.

Reduction of the dislocation should be done as soon as possible after the injury. An anaesthetic is generally necessary, so as to overcome the involuntary contraction of the muscles, as well as to relieve pain, although prolonged anaesthesia is unnecessary. Impaction of the fragments should be broken up in the majority of the cases, and the dislocation reduced.

After the proper reduction, the fragments will usually remain in place, although the reduction should be maintained by light splints—preferably a light splint, extending from just above the middle of the forearm to the heads of the metacarpal bones on the back, and one of similar length on the front of the arm, cut out to avoid pressure on the thenar muscles. The posterior one should be cut also to avoid pressure on the head of the ulna. Both

should be covered with cotton wadding and a piece of felt placed in the palm and above the wrist. The splints should be held lightly together by three pieces of adhesive to avoid undue pressure and allow for swelling. The splints should be not quite as wide as the arm and the tape should adhere to the arm so as to hold the splints in place. The whole should be wrapped in a two-inch bandage, snugly, but not too tightly applied. This dressing can be easily removed for inspection, which should usually be done on the third day. I sometimes use a light plaster cast, and split it down the entire length on the ulnar side, to allow for the swelling. This can be done very easily just before the plaster is dry. These dressings can be used for all fractures of the middle or lower forearm. The hand is placed in the semi-prone position to maintain parallelism of the bones. Care should be taken to avoid abduction of the hand.

A sling should be worn just long enough to hold the hand a little higher than the elbow. The hand should pass entirely through the sling as its weight will help to avoid abduction.

"Green stick" fractures are found chiefly in young patients and usually from two to three inches above the wrist, and are caused by direct force. Care should be taken not to fracture them entirely, but careful, steady pressure will reduce the deformity, as the bones of the young bend very easily. A light splint on the palmar aspect of the forearm will retain them in the proper position.

Among the complications of wrist fractures, fracture of the scaphoid may occur. This fracture is caused by a fall on the hand while it is in the prone position, the bone being caught between the other carpal bones and the articular surface of the radius and broken at its neck, the fragments interfering with the movements of the wrist. A diagnosis of this injury is possible, but not easy without the x-ray. If there is much interference with these movements, the treatment is removal of the offending fragments. This injury is often complicated by fracture or luxation of other carpal bones. The hand is put up in the same dressing as in Colles' fracture. The dressing should be removed early and passive motion done.

512 Taylor Building.

CYSTITIS.*

By R. S. FITZGERALD, M. D., Richmond, Va.

Cystitis is an inflammation of the bladder due to some form of germ infection. In accordance with the clinical course it may be classified as acute or chronic.

ETIOLOGY.

The causes are predisposing and exciting. The predisposing causes are those which favor retention and congestion. A normal bladder which is evacuated at regular intervals is not easily infected. Even though germs are carried into the bladder by dirty instrumentation, the healthy tissue is sufficient to prevent penetration and multiplication of micro-organisms. The retention of urine, which causes the congestion, is in proportion to the acuteness of the retention. A sudden distention of the bladder is more favorable to congestion than a gradual distention. Trauma may be due to a jar, contusion, laceration, instrumentation, stone or foreign body. The urine may be too acid or too alkaline or a very low or very high s. p. may be a cause of congestion. Various drugs may cause cystitis, as turpentine, balsams, alcohol or arsenic. Cardiac weakness and degeneration of the vessels in the aged, combined with enlarged prostate, thereby cause retention of urine, which results in cystitis.

The exciting cause of cystitis is local infection due to catheterization, etc., or the germs may enter the bladder by the kidneys, lymph channel or blood, or pass directly from the rectum, in cases of constipation, hemorrhoids or any diseased condition of the rectum.

Cystitis usually affects the trigonum, the urethral orifice, the ureteral openings. The urine is usually acid and contains pus and epithelium from the bladder. In interstitial cystitis, the inflammation extends more deeply, ridges in the bladder may be felt with the sound, also abscesses may be found in the walls. Symptoms of cystitis are pyuria, frequent urination, pain, muscular spasm, haematuria and fever.

DIAGNOSIS.

Frequent urination, pain, and pus in the urine are alone not enough to justify a complete diagnosis of cystitis. With the above

symptoms present, or some of them at any rate, when the bladder is tender in the rectal and suprapubic region, and the urine passed in three portions shows the greatest amount of pus in the last portion, and when the flat bladder epithelium is very abundant and injections show the bladder is hypersensitive to tension, then you may be positive of your diagnosis. In many cases, the usual symptoms are not present and the diagnosis is made by the use of the cystoscope examination.

PROGNOSIS.

If there is no lesion which tends to prolong vesical congestion, the prognosis of acute cystitis is good. Of course, stricture of the urethra, stone, or enlarged prostate may cause inflammation, and removal of either of these will relieve the condition. Cystitis, due to rough instrumentation or gonorrhoea, usually runs a rapid and favorable course. It happens occasionally when there is anything which interferes with the emptying of the bladder normally that an inflammation is set up. The prognosis of chronic cystitis is less favorable depending mainly upon the cause.

TREATMENT.

From what is known to cause cystitis, it is plain that prevention of the disease depends upon the avoidance of local congestion and the entrance of germs into the bladder. It is not absolutely necessary for patients with cystitis to remain in bed as it seems to increase the congestion rather than lessen it. Fresh air, a certain amount of exercise daily, such as walking, riding a bicycle, horse, etc., according to the strength of the patient are helpful.

The diet should be so regulated as to prevent indigestion. Even slight digestive disturbances will render the urine irritating. The various lithia waters are used with good results. It is not so much the kind of water but the quantity of pure water which does the work, constantly flushing the bladder. The skin should be carefully looked after. A daily bath is very essential.

The bowels should move at least once daily, or even twice, to prevent any congestion or obstruction as it is often by constipation that the colon bacilli get into the bladder and set up considerable trouble. Small doses of Epsom salt or any aperient water often have the desired effect, or occasionally an enema may be given.

*Read before a meeting of the Richmond Academy of Medicine and Surgery.

Getting the body chilled or feet wet should be carefully guarded against.

In order to render the urine bland or mildly antiseptic, we give urotropin, salol or boric acid about four times daily.

Acute cystitis, such as is caused by cantharides, etc., is treated by hot baths, rest in bed, elevation of the pelvis and thorough evacuation of the bowels by salines and cold enema of salt water.

For the relief of frequent and painful desire to urinate, we use suppositories belladonna (Gr. 1) and opium (Gr. $\frac{1}{2}$). In certain cases of gonorrhoeal prostatic cystitis, where the inflammation is limited to the prostatic urethra and the portion of the trigonum nearest the vesical orifice, an instillation of ten drops of a five per cent (5%) solution of silver nitrate will give almost instant relief.

The bleeding in acute inflammation is slight and relieves or lessens congestion and requires no special treatment.

Treatment of chronic cystitis will not respond unless the predisposing causes are removed, such as urethral obstructions due to stone, tumor, etc. Usually, if the predisposing causes are removed and the bladder put at rest, the urine rendered unirritating, stimulant and slightly antiseptic so that ammoniacal fermentation does not take place, the symptoms rapidly improve and the patient recovers.

Instillations are especially recommended when the inflammation is very severe, at or near the neck of the bladder. At first these instillations may cause tenesmus and pain, but are shortly followed by marked relief.

The solution most frequently used for this purpose is nitrate of silver, a maximum strength of five per cent (5%). It is always advisable to begin with a weak solution and increase to a 5%. These instillations are used every second and third day according to the reaction they cause. There are many other solutions which may be used with good results as well as medicine internally to render the urine bland and antiseptic as possible.

Recently, I have had a very interesting case to come under my observation. This case was referred by a doctor here in the city with a history as follows:

Female, married, about thirty-five years old, one child, history practically negative. She was suffering, as she expressed it, with a burning, bearing down sensation and constant de-

sire to urinate and usually passed only a few drops at a time. On cystoscopic examination I found the mucosa of the bladder somewhat congested, the ureteral openings were normal, both kidneys catheterized and specimen normal, the trigone was very red and congested all the way through.

I irrigated the bladder with normal saline solution and then used the silver sol. 2% at first, then gradually increased to 5% with practically no results, at the same time gave her medicines by mouth, kept bowels open and regulated the diet. She drank six or eight glasses of water daily. The general condition of the bladder improved but the constant desire to void did not improve.

My attention was called to an article in the *Journal of Obstetrics and Gynecology* written by a doctor in New York. I wrote him and he said he had had several similar cases and had treated them by injecting the trigone. I immediately ordered the needle, which was about sixteen inches long, and had to be attached to a hypodermic syringe and used through an endoscope. The solution used was a 2½% solution of quinine and urea hydrochloride with a 1 to 1000 sol. of adrenalin about a dram to the oz. of solution, and a little methylene blue to color solution. This was injected into the trigone starting at one ureteral orifice and infiltrating the parts across to the opposite side and then another line, using about 10 c.c.; I then let her rest for a week and repeated the same treatment starting where I left off before.

I am glad to say the woman improved wonderfully, could retain her urine several hours, general health had improved, and she had gained about ten pounds. She was taken to the hospital to have some pelvic work done, which was the understanding as soon as she could retain her urine.

I saw her a few days ago and she said she felt much better, had had practically no trouble, and would come back for me to examine her as soon as she was well enough to travel.

The man in New York claims to have had instant relief from the first treatment.

400 East Franklin Street.

"The more you have the more you want" doesn't apply when a fellow hears that triplets have been brought to his home.—(Selected.)

Public Health

In The Tuberculosis Field.

THE SPAHLINGER TREATMENT.

Latest among announced treatments for tuberculosis, hailed in enthusiastic terms by the lay press as "a medical discovery of supreme importance to the whole world", is the Spahlinger cure. This is a serum prepared by M. H. Spahlinger of Switzerland. It has been the subject of a report to the French Academy of Science by Professor D'Arsova, on behalf of the young Swiss discoverer. The French Academy took no action on the report, because the discoverer did not specify the exact nature of the vaccines he has prepared. Some press reports, which went so far as to assert that the British Ministry of Health was conducting a campaign to gain governmental adoption of the Spahlinger method, have not been confirmed at this writing, and personal correspondence with London physicians tends to discredit early reports that Spahlinger has found a specific of value in all cases of tuberculosis.

Writing under date of March 30, 1921, Dr. C. H. Colbeck, at one time connected with the London Hospital for Diseases of the Chest, says: "I treated a number of cases in 1914 with M. Spahlinger's serum, with varying results. I have treated no cases since then. Spahlinger tells me that he has improved on his material since 1914, but I have had no experience of it."

The Spahlinger "cure" comes in the long train of "chemotherapeutic agents" which have been given world-wide publicity from time to time, each announcement claiming for its day success in the search that has been vain, so far as we now know, from the days of Hippocrates and Galen. An excellent summary of the difficulties of the search for a specific in tuberculosis was given in an editorial in the *Journal of the American Medical Association* (July 24, 1920) which, among other statements, contained the following:

"The trouble with the chemotherapy of tuberculosis is that it is too difficult and especially too slow. Chemotherapeutic research is built up in slow stages at the best, but the slowness and the difficulty are augmented many

times when the tubercle bacillus is the subject. First comes the determining of the capacity of compounds to inhibit the growth of the tubercle bacillus in cultures—and the tubercle bacillus is not the easiest of organisms to handle, especially in incompletely equipped laboratories. Then must be determined what the capacity is to kill bacilli, which requires most meticulous technic, and control by inoculating scores or hundreds of guinea-pigs, which must be watched and studied for months or even for a year in each experiment. Then must follow experimental therapeutics on animals, which means daily work with further hundreds of animals, all under most careful technic and control. Such work as this is by far the most difficult and expensive sort of therapeutic study yet undertaken, requiring not only abundant equipment and resources, but also a co-operating staff of most highly trained bacteriologists, pathologists and chemists, and especially a highly critical direction. It cannot be done by casual investigators in a few months' time with an ordinary laboratory equipment."

Of this subject Paul Lewis has well said: "Certainly it will be a most unfortunate thing for the progress of tuberculosis research if every substance showing interesting properties in the laboratory is immediately rushed to the clinic regardless of consequences. In this situation patience is to be taken more than usually as an evidence of virtue."

B. L. T.

Medical Education

Richmond Selected By Commission As Medical Center.*

The Medical College of Virginia and the medical department of the University of Virginia will be consolidated and the united institutions will be located in Richmond, if the final report of the commission on medical education in Virginia is adopted by the General Assembly. Following prolonged sessions of the commission at the Westmoreland Club, the body, May 2, completed its labors, and the report will be handed to Governor Davis as soon as it is put into shape by the clerk of the commission.

*Report as given to newspapers and published in Richmond Times-Dispatch, May 3, 1921.

At its final session, held in Richmond, May 2, Dr. Theodore Hough, of Charlottesville, member of the committee, was authorized to issue the following statement:

UNANIMOUS ON CONSOLIDATION.

"At its final session, held in Richmond, May 2, the Commission on Medical Education in Virginia adopted a majority report favoring the location of the single State-supported medical school in Richmond, this school to be the medical department of the University of Virginia. On the policy of consolidation and of making the combined school the medical department of the University of Virginia the commission was unanimous. On the question of location five of the nine members of the commission voted in favor of Richmond. One member of the commission voted against the majority report, asking for a survey by an outside agency, but not expressing a preference for location."

The decision of the commission was not reached until every phase of the situation had been fully discussed. Many meetings were held, and debate was full and frank. Friends of the university, who wanted the institution located in Charlottesville, maintained their stand throughout. The member of the body who declined to vote for the location at either place, was as insistent upon his contention that disinterested experts should make a comprehensive survey of the situation before final action, while the Richmond advocates stuck to their original declaration that, owing to its location, its clinical advantages and the large number of specialists located here, no better nor more ideal site could be selected.

SUGGESTION OFFERED IN 1905.

The suggestion of a consolidation of interests was first offered in 1905. Nothing definite was done for a number of years. In 1913 the question again arose, and it was practically decided that the consolidation should become effective, with Richmond as the location of the college. The Legislature declined to act, however, and not until 1920 did the question again come to a head. In his message to the General Assembly on January 14, 1920, Governor Davis recommended that the two State-aided medical schools in Virginia be consolidated. The large sum of money appropriated annually to the two institutions called for co-ordination of interests both from the standpoint of economy and efficiency. Later in the session of the Gen-

eral Assembly a bill was passed providing for the formation of a commission. That body began to function shortly after the adjournment of the Legislature, and a number of meetings were held and lengthy discussions were indulged in. Public sentiment was aroused in various localities, and pressure was brought to bear from various interests.

The report of the commission will be reviewed by Governor Davis within the next thirty days. Under the act of the Assembly creating the commission, the Governor must submit the report to the board of the Medical College of Virginia and that of the medical department of the University. These bodies will, in turn, report back to the Governor with their recommendations, and upon this the Governor will report to the General Assembly next year.

BILL PRESENTED BY HALL.

The bill creating the commission was presented by Delegate Wilbur C. Hall, of Loudoun, and adopted, the Senate concurring in the action of the House. The House named two members, the Senate two and one was taken from the University of Virginia faculty and one from the Medical College of Virginia and another from the Virginia Polytechnic Institute and two from the medical profession at large. The composition of the commission is as follows: Wilbur C. Hall, of Loudoun, and Dr. W. D. Prince, of Sussex, on the part of the House; Senator M. B. Booker, of Halifax, and Senator J. B. Woodson, of Amherst, on the part of the Senate; Dr. Stuart McGuire, of the Medical College of Virginia; Dr. Theodore Hough, of the University of Virginia; Dr. E. L. Kendig, of Victoria, and Dr. Beverley Tucker, of Richmond, from the medical profession at large, and Julian P. Burruss, of the Virginia Polytechnic Institute.

Soon after the formation of the commission there began a series of hearings, with the most distinguished educators and men trained in the work of enlarging schools, summoned to state their views on the subject. The University of Virginia wanted the medical school located there. The city of Richmond, long noted as a medical center, made a determined fight to retain the school here. The commission considered all the available data on the subject, they listened to presentation of the merits of the two places, and they spent many hours in the effort to reach a conclusion.

One of the factors for the merging of the schools was the fact that neither could get the benefit of the immense fund that would be available for the advancement of medical science—the Rockefeller Foundation and other funds that might be had if there were but one medical school in the State.

UNIVERSITY'S CLAIM STRONG.

On behalf of Charlottesville argument was made to have the medical school located near the University of Virginia. The claims of the University were strong, and it was pointed out that the prestige of the University was such that it would carry weight and serve to attract students. Then, too, the students would have a chance to imbibe the general educational atmosphere of the institution founded by Thomas Jefferson.

Richmond contended that here the students could be accommodated in every way; that the abundance of clinical material, the accessibility of the city, the splendid buildings owned by the State, the admitted unequalled hospital facilities, the presence of many of the ablest professional men in all branches of medicines, the associated courses, the long and recognized standing of the Medical College of Virginia—in fact, Richmond and her great and interesting history from every viewpoint were presented.

Meetings were held at Charlottesville and in Richmond. The members of the commission wrestled with the subject from every angle.

VARIOUS PROPOSALS MADE.

Various propositions were made—to have the course divided between this city and the University of Virginia—to teach the first two years there and to make this city the finishing of the course. It was agreed almost at the outset that the school should be under the direction of the University of Virginia—that it should be the medical department of the university. The suggestion that the four-year term be divided met with little favor.

In his message delivered before the General Assembly on January 14, 1920, Governor Davis recommended the establishment of one institution, on the standpoint of both efficiency and economy. Following this recommendation, the General Assembly adopted a bill providing for the formation of the commission. Governor Davis, on this subject, said:

GOVERNOR DAVIS'S MESSAGE.

"There are two State-aided medical schools in Virginia. There should be, as in other States, but one. The Medical College of Virginia receives \$70,000 each year, and the University of Virginia \$96,175 each year for the biennium period. The best thought to be had upon the subject is that these State-aided institutions operate to their own detriment in the same sphere of usefulness, and appropriation made by the State should be to one institution, rather than to be divided between the two.

"I am impressed, from the standpoint of efficiency and economy of administration, that it would be well for the Legislature to take cognizance of the condition to which I have referred, and that in aid of the adoption by the State of a broad constructive policy in the selection of a single medical school, which will alone receive the support of the State, a committee of nine be authorized to investigate the advisability of having one State-aided medical school in Virginia rather than two, and assisted by trained experts in medical education, without undue expense to the State, to study medical education in Virginia and upon the basis of such study and after all the facts and conditions are understood, to make to the Governor, for transmission to the General Assembly, such recommendations as they may think wise, to the end that medical education in Virginia be unified and the whole situation be made as efficient and logical as possible.

"The committee to consist of nine members, should be appointed—three members by the Senate, three by the House of Delegates, and three by the Governor, all to serve without compensation.

"A report based upon scientific research would be authoritative and enable the General Assembly to proceed with wisdom, should the institutions not act, upon the conclusions reached by the expert advice secured by the committee."

Proceedings of Societies

Roanoke Academy of Medicine.

At the regular meeting of the Academy, April 18, Dr. Kennon Dunham, of Cincinnati, one of the best recognized authorities in this country on tuberculosis, and Dr. A. L. Gray, president of the Medical Society of Virginia,

and one of the leading roentgenologists in the South, read papers of great interest. Members of the Southwest Virginia Medical Society and of the Mercer County, W. Va., Medical Society, as well as a number of out of town physicians, were invited to attend. There was an attendance of over one hundred, including members and guests. A buffet luncheon was served following the meeting.

Wise County Medical Society.

A meeting of this Society was held April 26 at the Norton, Va., Hospital, at which time Dr. Joseph A. McGuire, of Norton, was elected president for the ensuing year, and Dr. C. B. Bowyer, of Stonega, was re-elected to the position of secretary-treasurer.

The Dinwiddie County Medical Society,

At a meeting held April 21, elected the following officers: President, Dr. Jos. M. Burke, Petersburg; vice-president, Dr. Geo. W. Fultz, Butterworth; and secretary-treasurer, Dr. Wm. C. Powell, Petersburg.

The Va. Section, Clinical Congress, American College of Surgeons

Held its first annual meeting in Richmond, April 14-15, with the Jefferson Hotel as headquarters. Officers in charge of the Richmond meeting were Dr. A. Murat Willis, Richmond, as chairman; Dr. Charles R. Robins, Richmond, secretary. These with Dr. Southgate Leigh, Norfolk, as counselor, formed the Virginia Executive Committee. The local committee on arrangements was composed of Drs. J. Shelton Horsley, Robt. C. Bryan and C. C. Coleman. Forty-five members, five applicants for membership and seven out-of-State visitors were present, which was an excellent showing, as there are at this time only 62 members of the College in Virginia.

There were three special features that were emphasized: a hospital conference, a public meeting for the laity, and the clinics. At the hospital conference standardization was discussed and its advantages dwelt upon. The general way in which efforts of the College in this particular work have been supported by our hospitals and the rapid advancement they have made in complying with the requirements are matters of favorable comment. Standardization has been placed upon a sound foundation and the necessity for all hospitals to conform is becoming very apparent.

At the public meeting an address was made by Hon. H. St. George Tucker, after which the work of the College and its relation to the public, the early recognition of cancer, the standardization of hospitals, and various other matters were discussed in popular style by good speakers and the interest that the public has in these matters brought home to the audience, after which Dr. Douglas Freeman, Editor of the News-Leader, closed the meeting in his own inimitable style.

Of chief interest to the members were the clinics that were held in the various hospitals. The members were divided into small groups by a system of tickets and were thus distributed to each of the hospitals.

The clinics were designed to show the inter-depending work of the staff in all of its various departments both in the study of cases and methods of arriving at diagnosis and also in treatment. All of the hospitals showed excellent team work.

Altogether this first meeting may be considered a great success and fittingly inaugurated the annual meetings which will hereafter be held. The next meeting will be held in Norfolk and the following are the officers who will have it in charge: Dr. Lomax Gwathmey, Norfolk, chairman; Dr. J. L. Rawls, Norfolk, secretary, and Dr. S. S. Gale, Roanoke, counselor.

Distinguished visitors from a distance included Drs. Victor C. Vaughan, of the University of Michigan, Ann Arbor; Dean Lewis, of Chicago; Charles A. Hamann, of Cleveland; James L. Smith, of Hospital Survey Department, American College of Surgeons; Judge Harold M. Stephens, Director of Hospital Activities, American College of Surgeons, and Rev. C. B. Moulinier, S. J., President Catholic Hospital Association.

Correspondence

An Appreciation From Abroad.*

Warsaw, March 24, 1921.

To the Editor:

I am very thankful to you for sending me the journal to Europe. One must be far away from home to realize the joy of reading one's own State medical paper.

*Dr. Newman was connected with the City Health Department of Danville, Virginia, but volunteered for service in Poland, and sailed last Fall. He is a member of the Medical Society of Virginia.

The Medical Unit of Dr. Plotz, with which I came abroad, was reorganized in Paris in conjunction with the Hoover Relief Mission, American Red Cross, and the League of Red Cross Societies, as a Medical Commission to Poland. The commissioners were assigned to various districts as Medical Directors of the Child Relief Campaign. I am the Medical Director for Congress Poland. My functions are to carry on investigations, surveys and campaigns, pertaining to child welfare. Tuberculosis is our greatest problem.

I trust that your journal will reach me regularly.

SAMUEL NEWMAN.

Secretary's Announcement

Go to Boston, June 6th-10th.

An especially attractive route to Boston for the meeting of the American Medical Association is provided by the Southern Railway and the Chesapeake Steamship Company via West Point. Trains leave the Main Street Station, Richmond, Va., daily, except Sunday, at 5.10 P. M., connecting with palatial steamers at West Point and arriving at Baltimore the following morning at 7 A. M. Approximately two hours is afforded in Baltimore for an easy connection with the Pennsylvania Railway through train to Boston, arriving at your destination about 8 P. M. A trip up Chesapeake Bay at this season of the year is very attractive and offers busy physicians an opportunity for rest.

The detailed schedule of this line is given in the advertising columns of this issue. The Secretary-Treasurer will be glad to make reservations for any members of the State Society who may want to go to Boston by this route or by way of the Merchants and Miners all-water route from Norfolk to Boston.

The Truth About Medicine

During March the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Abbott Laboratories:

Tablets Acriflavine—Abbott 0.46 grain.

Armour & Co.:

Ampoules Pituitary Liquid—Armour 0.5 cc.

Hynson, Westcott & Dunning:

Sterile Ampoules of Benzyl Benzoate—H. W. D.

E. R. Squibb & Sons:

Arsphenamine—Squibb.

Neoarsphenamine—Squibb.

Sodium Arsphenamine—Squibb.

Book Announcements

A Compend of Human Physiology. Especially adapted for the use of medical students. By ALBERT P. BRUBAKER, A. M., M. D., Professor of Physiology and Medical Jurisprudence, Jefferson Medical College, Philadelphia. 15th edition. 264 pages with 26 illustrations. Philadelphia. P. Blakiston's Son and Company. 1921. 16mo. Cloth. Price, \$2.00 net.

New and Nonofficial Remedies, 1921. Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association, on January 1, 1921. Chicago. American Medical Association, 535 North Dearborn Street. Paper. 418-xxxii pages. Price, \$1.50 postpaid. Supplements, as issued from time to time during the year, free to purchasers.

Johns Hopkins Hospital Reports. Vol. XX, Fasciculus III. Baltimore. Johns Hopkins Press. 1921. Paper. 64 pages and illustrations.

Tuberculosis of Children. Its Diagnosis and Treatment. By PROFESSOR DR. HANS MUCH, Director of the Department for the Science of Immunity and for the Research of Tuberculosis at University of Hamburg, Germany. Translated by DR. MAX ROTHCHILD, Medical Director of California Sanatorium for Treatment of Tuberculosis, San Francisco and Belmont, Cal. New York. The Macmillan Company. 1921. 8vo. Cloth. 156 pages.

Birth Statistics for the Birth Registration Area of the United States. 1919. Fifth Annual Report. By Department of Commerce, Bureau of the Census, Sam. L. Rogers, Director. 1921. Price 35 cents. Sold only by the Superintendent of Documents, Government Printing Office, Washington, D. C.

A Symposium of Opinions from Prominent Men on "The Pace That Kills." By A. L. GOLDWATER, M. D., Director Research Dept., Medical Review of Reviews. New York. Paper. 27 pages.

Practical Chemical Analysis of Blood. A Book Designed as a Brief Survey of this Subject for for Physicians and Laboratory Workers. By VICTOR CARYL MYERS, M. A., PH. D., Professor of Pathological Chemistry, New York Post-Graduate Medical School and Hospital. Illustrated. St. Louis. C. V. Mosby Company. 1921. Cloth. 121 pages. 8vo. Price \$3.00.

In writing advertisers, please mention this journal.

Virginia Medical Monthly

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All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

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Editorial

A Voice From The Past.

As illustrative of the similarity of requirements in manners and professional ethics, essential for the physician of the past and present, we quote from a lecture on "The Duties of a Physician," delivered by Dr. Benjamin Rush, professor of the Institute and Practice of Medicine and of Clinical Practice, in the University of Pennsylvania. This lecture was delivered before the student body on February 7, 1789.

"I shall conclude our course of lectures, by delivering to you a few directions for the regulation of your future conduct and studies, in the line of your profession.

"I. * * * * *

"II. Avoid singularities of every kind in your manners, dress, and general conduct. Sir Isaac Newton, it is said, could not be distinguished in company, by any peculiarity, from a common well bred gentleman. Singularity, in any thing, is a substitute for such great or useful qualities as command respect; and hence we find it chiefly in little minds. The profane and indelicate combination of extravagant ideas, improperly called wit, and the formal and pompous manner, whether accompanied by a wig, a cane, or a ring, should be all avoided, as incompatible with the simplicity of science, and the real dignity of physic. There is more than one way of playing the quack. * * * * *

"III. It has been objected to our profession,

that many eminent physicians have been unfriendly to Christianity. If this be true, I cannot help ascribing it in part to that neglect of public worship, with which the duties of our profession are often incompatible; for it has been justly observed, that the neglect of the religious and social duty generally produces a relaxation, either in principles or morals. Let this fact lead you, in setting out in business, to acquire such habits of punctuality in visiting your patients, as shall not interfere with acts of public homage to the Supreme Being. * * * * I believe Christianity places among its friends more men of extensive abilities and learning in medicine, than in any other secular employment. * * * * *

"IV. Permit me to recommend to you a regard to all the interests of your country. The education of a physician gives him a peculiar insight in the principles of many useful arts, and the practice of physic favors his opportunities of doing good, by diffusing knowledge of all kinds. It was in Rome, when medicine was practised only by slaves, that physicians were condemned by their profession 'mutam exercere artem.' But in modern times, and in free governments, they should disdain an ignoble silence upon public subjects. The American Revolution has rescued physic from its former slavish rank in society. For the honor of our profession it should be recorded, that some of the most intelligent and useful characters, both in the cabinet and the field, during the late war, have been physicians. * * * * *

"V. Let me advise you, in your visits to the sick, *never* to appear in a hurry, nor to talk of indifferent matters, before you have made the necessary inquiries into the symptoms of your patient's disease.

"VI. Avoid making light of any case, 'Respite finem' should be the motto of every indisposition. There is scarcely a disease so trifling, that has not directly or indirectly, proved an outlet to human life. This consideration should make you anxious and punctual in your attendance upon every acute disease, and keep you from risking your reputation by an improper or hasty diagnosis.

"VII. Do not condemn or oppose, unnecessarily, the simple prescriptions of your patients. Yield to them in matters of little consequence, but maintain an inflexible authority over them in matters that are essential to life.

"VIII. Preserve, upon all occasions, a com-

posed or cheerful countenance in the room of your patients, and inspire as much hope of a recovery as you can, consistent with truth, especially in acute diseases. The extent of the influence of the will over the human body has not yet been fully ascertained. I reject the futile pretensions of Mr. Mesmer to the cure of diseases, by what he has absurdly called animal magnetism. But I am willing to derive the same advantages from his deceptions, which the chemists have derived from the delusions of alchemists. The facts which he has established clearly prove the influence of the imagination, and will, upon diseases. Let us avail ourselves of the handle which those faculties of the mind present to us, in the strife between life and death. I have frequently prescribed remedies of doubtful efficacy in the critical stages of acute diseases, but never till I had worked up my patients into a confidence, bordering upon certainty, of their probable good effects. The success of this measure has much oftener answered, than disappointed my expectations; and while my patients have commended the vomit, the purge, or the blister, which was prescribed, I have been disposed to attribute their recovery to the vigorous concurrence of the *will* in the action of the medicine. Does the will beget insensibility to cold, heat, hunger, and danger? Does it suspend pain, and raise the body above feeling the pangs of Indian tortures? Let us not then be surprised that it should enable the system to resolve a spasm, to open an obstruction, or to discharge an offending humour. I have only time to hint at this subject. Perhaps it would lead us, if we could trace it fully, to some very important discoveries in the cure of diseases.

"IX. Permit me to advise you, in your intercourse with your patients, to attend to that principle in the human mind, which constitutes the association of ideas. A chamber, a chair, a curtain, or even a cup, all belong to the means of life or death, accordingly as they are associated with cheerful or distressing ideas, in the mind of a patient. But this principle is of more immediate application in those chronic cases which affect the mind. Nothing can be accomplished here, till we produce a new association of ideas. For this purpose a change of place and company are absolutely necessary. But we must sometimes proceed much further. I have heard of a gentleman in South Carolina, who cured his fits of low spirits by changing

his clothes. The remedy was a rational one. It produced at once a new train of ideas, and thus removed the paroxysm of his disease.

"X. Make it a rule never to be angry at any thing a sick man says or does to you. Sickness often adds to the natural irritability of the temper. We are, therefore, to bear the reproaches of our patients with meekness and silence. It is folly to resent injuries at any time, but it is cowardice to resent an injury from a sick man, since, from his weakness and dependence upon us, he is unable to contend with us upon equal terms. You will find it difficult to attach your patients to you by the obligations of friendship or gratitude. You will sometimes have the mortification of being deserted by those patients, who owe most to your skill and humanity. This led Dr. Turner to advise physicians never to choose their friends from among their patients. But this advice can never be followed by a heart that has been taught to love true excellency, wherever it finds it. I would rather advise you to give the benevolent feelings of your hearts full scope, and to forget the unkind returns they will often meet with, by giving to human nature—a tear.

"XI. Avoid giving a patient over in an acute disease. It is impossible to tell in such cases where life ends, and where death begins. Hundreds of patients have recovered, who have been pronounced incurable, to the great disgrace of our profession. I know that the practice of predicting danger and death, upon every occasion, is sometimes made use of by physicians, in order to enhance the credit of their prescriptions, if their patients recover, and to secure a retreat from blame, if they should die. But this mode of acting is mean and illiberal. It is not necessary that we should decide with confidence, at any time, upon the issue of a disease.

"XII. A physician in sickness is always a welcome visitor in a family; hence he is often solicited to partake of the usual sign of hospitality in this country, by taking a draught of strong liquor, every time he enters into the house of a patient. Let me charge you to lay an early restraint upon yourselves, by refusing to yield to this practice, especially in the *forenoon*. Many physicians have been innocently led by it into habits of drunkenness. You will be in the more danger of falling into this vice, from the great fatigue and inclemency of the

weather to which you will be exposed in country practice. But you have been taught that strong drink affords only a temporary relief from those evils, and that it afterwards renders the body more sensible of them.

"XIII. I shall now give some directions with respect to the method of charging for your services to your patients.

"When we consider the expense of a medical education, and the sacrifices a physician is obliged to make of ease, society and even health, to his profession; and when we add to these, the constant and painful anxiety which is connected with the important charge of the lives of our fellow-creatures, and, above all, the inestimable value of that blessing which is the object of his services, I hardly know how it is possible for a patient sufficiently and justly to reward his physician. But when we consider, on the other hand, that sickness deprives men of the means of acquiring money; that it increases all the expenses of living; and that high charges often drive patients from regular-bred physicians to quacks; I say, when we attend to these considerations, we should make our charges as moderate as possible, and conform them to the following state of things.

"Avoid measuring your services to your patients by scruples, drachms, and ounces. It is an illiberal mode of charging. On the contrary, let the number and *time* of your visits, the nature of your patient's disease, and his rank in his family or society, determine the figures in your accounts. It is certainly just, to charge more for curing an apoplexy, than an intermitting fever. It is equally just, to demand more for risking your life by visiting a patient in a contagious fever, than for curing a pleurisy. You have likewise a right to be paid for your anxiety. Charge the same services, therefore, higher, to the master or mistress of a family, or to an only son or daughter, who call forth all your feelings and industry, than to less important members of a family and of society. If a rich man demand more frequent visits than are necessary, and if he impose the restraints of keeping to hours, by calling in other physicians to consult with you upon every trifling occasion, it will be just to make him pay accordingly for it. As this mode of charging is strictly agreeable to reason and equity, it seldom fails of according with the reason and sense of equity of our pa-

tients. Accounts made out upon these principles are seldom complained of by them. I shall only remark further upon this subject, that the sooner you send in your accounts after your patients recover, the better. It is the duty of a physician to inform his patient of the amount of his obligation to him at least *once* a year. But there are times when a departure from this rule may be necessary. An unexpected misfortune in business, and a variety of other accidents, may deprive a patient of the money he had allotted to pay his physician. In this case, delicacy and humanity require, that he should not know the amount of his debt to his physician, till time had bettered his circumstances.

"I shall only add under this head, that the poor of every description should be the objects of your peculiar care. Dr. Boerhaave used to say, 'they were his best patients, because God was their paymaster.' The first physicians that I have known have found the poor the steps, by which they have ascended to business and reputation. Diseases among the lower class of people are generally simple, and exhibit to a physician the best cases of all epidemics, which cannot fail of adding to his ability of curing the complicated diseases of the rich and intemperate. There is an inseparable connection between a man's duty and his interest. Whenever you are called, therefore, to visit a poor patient, imagine you hear the voice of the good Samaritan sounding in your ears, 'Take care of him, and I will repay thee.'

"* * * * may the blessings of hundreds and thousands, that were ready to perish, be your portion in life, your comfort in death, and your reward in the world to come."

News Notes

American Medical Association.

The time for this meeting, June 6-10, is rapidly approaching, and Boston, "The Hub," with its attractive side trips, is always a center of interest for those who visit New England. One of the attractions accessible to doctors who expect to attend from this section of the country, is a water trip, which combines comfort and pleasure. Two of these are available—one an overnight trip from West Point, Virginia, to Baltimore, by the Southern Railway and Chesapeake Steamship Company, where a fast train

may be taken to Boston; the other a thirty-six hours' trip by the Merchants and Miners Line from Norfolk to Boston. Both provide comfortable staterooms and delicious meals. Write for their folders.

Members who contemplate going by rail, should make request at once for Identification Certificates (accompanied by a stamped, self-addressed envelope) to the Secretary of the A. M. A., Dr. Alex. R. Craig, 535 N. Dearborn Street, Chicago, Ill. Be sure to take with you your 1921 membership card. If you have failed to receive it, write for it at once to the same address.

Virginia's delegates to this meeting are Drs. Southgate Leigh, Norfolk; Ennion G. Williams, Richmond, and Jos. T. Buxton, Newport News.

Last, but not least, do not fail to make hotel reservations in advance. Dr. John T. Bottomley, chairman of the Boston Committee on Hotels, will be glad to help you, if you write him care the Boston Medical Library, 8 The Fenway, Boston 17, Mass.

Medical College Finals.

Both of the Virginia medical schools will hold their final exercises before we again go to press and a number of young doctors will be graduated to help fill the gaps made in the medical profession by death and retirements. There are about twenty-five members in the graduate medical classes of each of the schools.

Medical College of Virginia finals will commence with the baccalaureate sermon on May 29; the meeting of the Alumni Association will be held on May 30, and closing exercises will be held on the evening of May 31, at which time Dr. F. W. Boatwright, president of the University of Richmond, will be the orator.

The University of Virginia, Department of Medicine, will hold their exercises in conjunction with those of other graduate schools of the University, beginning May 31. This is the centennial program of the University of Virginia and the exercises will extend over four days. Sir Auckland Geddes, himself a physician and British ambassador to the United States, is to be among the speakers on this occasion.

Married—

Dr. Frank Stoddard Johns, Richmond, and Miss Anne Page, of Hanover County and Richmond, April 30.

Dr. Francis Whittle Upshur and Miss Mar-

tha Maury Robinson, both of Richmond, April 20.

Dr. William Pinkney Herbert, Asheville, N. C., and Miss Frances Venable Carrington, daughter of Dr. and Mrs. Charles V. Carrington, of Richmond, April 26.

Dr. E. Wheeler Buckingham, of Lynchburg, Va., who left last Fall for China for medical missionary work, and Miss Bessie Kenniger, of London, England, in Shanghai, China, February 28. They met during the World War and are both now engaged in missionary work in China.

Dr. Richard Ovid Rogers, of Bluefield, W. Va., and Miss Nancy Louise Martin, of Stuart, Va., in Richmond, April 30.

Dr. John Carroll Wiggins, Winston-Salem, N. C., and Miss Inez Hester, May 16.

Dr. Howard Lee Cecil, Baltimore, Md., and Miss Bessie Walker Omohundro, of Northumberland County, Va., April 30.

Dr. Allen Hoyt Moore, Clover, Va., and Miss Faye Allstatt, Kokomo, Ind., March 15.

Doctors Active Workers in Roanoke University Club.

At a recent meeting of the board of directors of the new University Club, in Roanoke, Va., Dr. Joseph T. McKinney was elected president, Dr. Elbyrne Gill secretary-treasurer, and Dr. Harry B. Stone one of the directors of the club.

The North Carolina Medical Society

Held its annual meeting at Pinehurst, April 26-28, under the presidency of Dr. Thomas E. Anderson, of Statesville, with a registered attendance of about 450. Drs. James K. Hall, Richmond, R. L. Payne and Jas. H. Culpepper, both of Norfolk, attended as delegates from the Medical Society of Virginia. Papers were read by the following Virginia physicians: Drs. Stuart McGuire, J. A. Hodges, Douglas VanderHoof, Beverley R. Tucker, F. M. Hodges, James K. Hall and R. L. Payne.

Dr. Hubert A. Royster, of Raleigh, was elected president; Dr. W. T. Parrott, of Kinston, first vice-president, and Dr. L. B. McBrayer, of Sanatorium, secretary-treasurer. Winston-Salem was selected as the 1922 place of meeting.

The American Association Of Genito-Urinary Surgeons

Held a two days' session in this city, May 2 and 3, with an attendance of between 40 and 50 members. Dr. John H. Cunningham, Jr., of

Boston, presided, and a number of interesting papers were read by men eminent in this specialty. The next meeting is to be held in Washington, D. C., in May, 1922, and the following officers were elected: President, Dr. James Pedersen, New York City; Vice-President, Dr. William E. Lower, Cleveland, O.; Secretary-Treasurer, Dr. Richard G. O'Neil (re-elected), Boston, Mass.; and new members of the Council, Drs. John H. Cunningham, Jr., Boston, and Robert C. Bryan, Richmond. On the first evening of the meeting, a very handsome reception was tendered members of the Association and a number of local doctors by Dr. Robt. C. Bryan, at his residence.

Dr. E. M. Gayle,

Who was for several years connected with Westbrook Sanatorium, this city, is now located at 213 Middle Street, Portsmouth, Va.

Dr. John R. Guerrant,

Of Franklin County, Va., is at present in Davy, W. Va.

Dr. William S. Thayer

Has tendered his resignation as professor of medicine at Johns Hopkins University after a service of slightly over thirty years, his idea being that a younger man should be put in charge of this department. His resignation will be effective July 1, 1921, at which time he will return to private practice.

Hilltop Sanatorium, Danville, To Be Rebuilt.

A campaign was recently held in Danville, Va., to raise \$50,000 in three day's time, to maintain and rebuild Hilltop Sanatorium for consumptives, which has done such an excellent work in the five years in which it has been in operation. A feature of the campaign was the extreme generosity of people of humble means. City policemen and firemen made a 100 per cent. subscription. A \$1,000 donation was made by John B. Harvie, tobacconist, as a memorial to his father, the late Dr. Lewis E. Harvie.

Dr. and Mrs. E. S. Thompson,

Of Winston-Salem, N. C., were recent visitors in this city.

Move Offices.

Drs. Clifton M. Miller and W. L. Mason, of this city, announce the removal of their offices from 3 West Grace Street, to Stuart Circle Hospital.

The American Medical Editors' Association

Will hold its annual meeting at Hotel Lenox, Boston, Mass., June 6 and 7, under the presidency of Dr. H. S. Baketel, editor of *Medical Times*. This meeting promises to be of advantage to every doctor even remotely interested in medical journalism.

Dr. H. S. Belt,

Who has been ill at his home in South Boston, Va., is now much improved.

Dr. Ira M. Hardy,

Of Kinston, N. C. suffered some minor cuts and bruises in an accident on the Southern Railroad at China Grove, N. C., on April 18.

The Virginia Graduate Nurses' Association

Is to hold its annual meeting in Danville, Va., May 25-27, under the presidency of Miss Thacker, superintendent of Lewis-Gale Hospital, of Roanoke.

Dr. R. E. Booker

Has returned to his home at Lottsburg, Va., after a short visit to Baltimore.

Dr. W. W. Chaffin,

Pulaski, Va., was one of the representatives from the Pulaski Rotary Club to the district convention in Norfolk, Va., about the middle of April. Mrs. Chaffin accompanied him.

The Southern Railway Surgeons' Association

Will hold its annual meeting in Mobile, Ala., May 24, 25 and 26, under the presidency of Dr. W. A. Applegate, of Washington, D. C. As this is a special anniversary meeting of the Association—its twenty-fifth—a large attendance is requested and expected.

Hopewell Hospital.

Application was made early this month for a charter for a new hospital in Hopewell, Va. Drs. D. L. and J. N. Elder, of Hopewell, and H. A. Burke, of Petersburg, are the incorporators, and the capital is fixed at \$25,000.

The Valley Medical Association

Is to meet in Staunton, Va., May 26, at 9 a. m. The meeting will adjourn at 1 p. m. for lunch and reconvene at 2 o'clock. A large number of papers on timely and interesting subjects have been promised and it is likely that a night session will have to be held. For further information, write at once to the president, Dr. M. J. Payne, Staunton, or to the secretary, Dr. A. C. Byers, Harrisonburg.

Dr. J. Lewis Riggles,

Washington, D. C., has moved his offices

from 1800 K Street to Stoneleigh Court, that city.

Dr. F. S. Givens,

Recently of Dorchester, Va., has moved to Wise, Va., and has formed a partnership with Dr. N. F. Hix, of that place.

Dr. William A. Strole,

Who sometime since made his home in Norfolk, Va., but has recently been in the West, has secured reciprocity with the State of California, and is now practicing in Los Angeles, with offices in the Baker-Detwiler Building.

Dr. W. S. Cox,

Whose address has been Little Plymouth, Va., is now located at Shackelfords, Va.

West Virginia To Have Hospital For Colored Insane.

A 650-acre farm has been purchased in Mason County, West Virginia, as a site for a proposed State hospital for colored insane.

The State Conference Of Charities and Corrections,

At a four days' meeting in Norfolk, Va., in April, elected Albert L. Roper, of the Norfolk City Council, president for the ensuing year, and selected Danville for its 1922 meeting place.

Dr. George Hannah Reese,

Of Petersburg, Va., has been appointed first lieutenant in the Medical Corps of the First Infantry, Virginia National Guard.

Sheppard-Towner Bill Again Introduced.

Predictions are that the Sheppard-Towner maternity and infancy bill will be passed by Congress at an early date. It was passed by the Senate in the last Congress but failed of consideration in the House for want of time.

Recent Visitors in Richmond.

Among Virginia doctors recently visiting in Richmond are: Drs. Richard Mason, The Plains; J. R. Couch, Alberta; C. J. Terrell, Hewlett; Thos. G. Hardy, Farmville; J. M. Holloway, Port Royal; E. H. Connelly, Alberta; Guy M. Naff, North Emporia; F. C. Miller, Cobham; L. R. Stinson, Scottsville; J. N. Clore, Madison; H. L. Mitchell, Callands; J. B. Woodson, Lowesville; E. L. Kendig, Victoria; John Gale, Ivor; J. J. Nelson, Columbia; Theodore Hough, University; R. L. Ozlin, Dundas; H. U. Stephenson, Toano; and the following attending the Virginia Section, American College of Surgeons—Drs. E. T.

Hargrave, J. L. Rawls, Southgate Leigh, R. L. Payne, John Winston, Jas. H. Culpepper, Kirkland Ruffin, Chas. J. Andrews, E. E. Feild, Burnley Lankford, A. A. Burke, E. C. S. Talisferro, P. St. L. Moncure, B. R. Kennon, Stanley H. Graves, Israel Brown, all of Norfolk; W. H. Goodwin and Stephen H. Watts, University; C. H. Barlow, Jos. D. Collins, R. L. Corbell and L. A. McAlpine, of Portsmouth; G. K. Vanderslice, Phoebus; Clarence Porter Jones, Jos. T. Buxton and O. T. Amory, Newport News; M. J. Payne, Staunton; Don Preston Peters and Elisha Barksdale, Lynchburg; H. D. Howe, Hampton; Hugh H. Trout and S. S. Gale, Roanoke; J. Coleman Motley, Abingdon; and S. B. Moore, Alexandria.

Dr. A. H. Deekens,

Of Richmond, went to Philadelphia early this month, to join his classmates of the University of Pennsylvania in a dinner they gave on May 7, to an honored member of that class, Rear Admiral Edward R. Stitt, who has recently been appointed surgeon general of the U. S. Navy.

Dr. Elijah White Titus,

A former resident of Loudoun County, this State, but who has been practicing in Washington, D. C., for several years, has been elected to a position on the staff of the Columbia Hospital, in Washington.

Dr. L. H. Gammon

Has announced his candidacy for mayor of Bristol, Va., in the municipal elections on June 7.

Dr. James B. Hackley,

Of Purcellville, Va., has been elected vice-president of the Chamber of Commerce of that town.

Dr. Thomas W. Evans,

Of Concord Depot, Va., has announced himself a candidate for Democratic nomination for the House of Delegates from Campbell County.

Dr. R. J. Payne

Has been appointed to fill a vacancy on the City Council of Fredericksburg, Va.

Model Law Adopted By West Virginia.

West Virginia legislature has just passed the model bill for the registration of births and deaths in that State. This is the forty-fifth state to adopt the law, leaving only Arizona, Nevada and South Dakota to fall in line.

Victory Medal for Ex-Service Men.

Upon request to the Victory Medal Office, 1112 Capitol Street, Richmond, Va., necessary forms for making application for the Victory Medal will be mailed promptly to any ex-service man of this State who desires them. It is necessary for the discharge certificate, or a certified copy thereof, on Form 740-c, A. G. O., in case of enlisted men, and Form 740-d, A. G. O., in case of officers, to accompany the application. When original discharge certificate is sent the office, application is approved, forwarded, and discharge certificate returned to applicant promptly. Applicant should always furnish a complete and correct address.

Do not delay in making application, as offices located in each State are likely to be discontinued in near future, when application will have to be made to the Adjutant General's Office, Washington, D. C., thereby causing a great deal more inconvenience and delay in receiving the medal.

Dr. M. R. Faville

Was recently elected president of the Roanoke Rotary Club.

Dr. Allen W. Freeman,

Formerly connected with the Virginia State Health Department, but now State Health Commissioner of Ohio, was a recent visitor in this city.

Dr. M. C. Oldham,

Lancaster, Va., has been elected one of the delegates from Virginia to the national convention of Modern Woodmen of the World, which is to meet in St. Louis.

The Woman Dental Hygienist,

Who is now doing efficient work among children, does not pull nor fill teeth and consequently is not a terror to them. Instead, she limits her work to cleaning and polishing the teeth above the gums, which, the U. S. Public Health Service states, is most helpful in making the gums healthy and in preventing decay. Twelve states have legalized such practice by women.

T. B. Clinics

Have recently been held in Montgomery, Fluvanna, Tazewell and Prince Edward Counties. Eight hundred and twenty-one persons were examined. Nearly seventy active cases of tuberculosis were found and a number of suspects. In the clinics held at Radford, in Montgomery County, Dr. W. E. Brown, of Catawba

Sanatorium, was assisted by Drs. Wilson, Fuqua, Noblin and Howerly, of that county. Dr. Wyndham Blanton, of Richmond, served as examiner in conjunction with Dr. Carter, of Piedmont Sanatorium, at the Prince Edward Clinic.

Dr. H. W. Carter,

Of Washington, N. C., was elected president of the Tri-County Medical Society, composed of physicians residing in Martin, Pitt and Beaufort Counties, N. C., which was recently organized at a meeting held in Washington, N. C.

Dr. Alonzo Myers,

Charlotte, N. C., sailed the latter part of April for Europe, where he expects to do post-graduate work in his specialty—orthopedic surgery—in Paris and Liverpool.

University of Va. Hospital.

The annual report of this hospital shows an excellent work done in that institution during the year ending June 30, 1920. There were 3,681 admissions, whereas the annual admissions twelve years ago were only 850. This hospital was opened in 1901 with twenty beds and now has a capacity of 200 beds. Among the improvements made last year may be mentioned: Improvements at the Nurses' Home amounting to \$4,000; x-ray department, \$3,000; enlarging the operating room and new equipment, \$4,000; enlarging the kitchen and dining room and new equipment, \$5,000. An American Red Cross ambulance and several other valuable gifts were received by the hospital.

Dr. Ernest Mosby,

Formerly of Waynesboro, Va., is now located at 99 Gilmer Avenue, Montgomery, Ala.

Dr. John E. Coles,

Who has been spending the winter at Ft. Myers, Fla., has returned to this State and is now at Esmont, Va.

Dr. J. H. Crouch

Notifies us that his address is now Smithfield, R. D. 2, instead of Runnymede, Va.

Dr. C. C. Carr

Has moved from Inman, Va., to Toms Creek, Va.

The W. Va. State Medical Association

Will hold its annual meeting at Charleston, May 24-26, under the presidency of Dr. J. Howard Anderson, of Marytown. Dr. R. A. Ashworth, of Moundsville, is secretary.

Dr. D. A. Dunkley,

Who has been one of the physicians to the Virginia Iron, Coal and Coke Company, at Toms Creek, Va., has moved to Roanoke, Va., and located at 715 Maiden Lane, Virginia Heights.

Dr. H. S. Smyth,

Who was for several years located at Plasterco, Va., is at present at Low Moor, Va.

Vienna Postgraduate Medical School Again at Work.

It is announced by the Dean of the Faculty of the Postgraduate Medical School in Vienna, Austria, that facilities for study and clinics are practically the same as before 1914. Lectures are delivered in German except as special arrangements are made for private English courses. It is stated that living conditions for foreigners are very good and expenses will not be more than \$50 to \$60 a month. The poor food conditions apply only to the native population. For further information, apply to the Editor of the Wiener Medizinische Wochenschrift, Vienna, IX., Porzellangasse 22.

Dr. Hugh H. Trout

Has been made Post Commander of the American Legion, Roanoke Post No. 3.

Mr. Wortley F. Rudd,

Dean of the School of Pharmacy of the Medical College of Virginia, was chosen to act as councilor in behalf of the Virginia Section, American Chemical Society, at a recent convention held at Rochester, N. Y.

Wanted—A Doctor!

He must be a Christian physician under 35, and have a knowledge of psychiatry or be willing to spend a year or two in preparation for practice among the insane. He is needed for medical missionary work of the Presbyterian Church in China, but need not be a Presbyterian.

Twenty-three years ago the first hospital for insane in China was opened by Dr. John G. Kerr, in Canton, where many years earlier foreign medical work had its beginning. Several years later he was forced to resign on account of age. Much good has been accomplished in this insane hospital, which can accommodate 100, and would have been larger had land and buildings been available for all for whom admission has been sought.

If interested, communicate with Walter I. Clarke, Publicity Director, Presbyterian

Church in U. S. A., 156 Fifth Avenue, New York City.—(Adv.)

Wanted—

By experienced physician, graduate of Class A College, a country practice in Virginia, with or without property. Must be unopposed, good roads, good fees. Address Box 176, Wilkesboro, N. C.—(Adv.)

Wanted—

A location in Virginia. Would be glad to get in communication with physician who wishes to sell and vacate field. Must be desirable. Address "J. J.," care *Virginia Medical Monthly*.—(Adv.)

Wanted—

To buy an improved Virginia farm of from 50 to 100 acres, preferably located in Valley of Virginia, good roads, close to good schools, etc., and near a thriving town that would make a good location for a doctor in active practice, age 40. Address communications to "S," care this journal.—(Adv.)

Obituary Record

Dr. Adolphus Franklin Kerr

Died at his home in Clifton Forge, Va., April 15, after an illness of several weeks. He moved to that place from Millboro, Va., a number of years ago and had engaged in active practice to a short time before his death. He was born in Pocahontas County, (then Va., but now W. Va.), in 1848. He received his medical diploma from the Missouri Medical College in 1877 and, before moving to Virginia, was a member of the Medical Examining Board of Arkansas. He joined the Medical Society of Virginia in 1888. He was a prominent Mason and was for a number of years secretary of his local lodge. The interment was made in Millboro. His wife and three children survive him.

Dr. E. A. Thomas.

A prominent physician of Wytheville, Va., died suddenly from heart trouble on April 26. He was in his usual health until the previous evening, when he complained of a pain in his chest, which grew worse, resulting in his death. Dr. Thomas was fifty-two years of age and a graduate in medicine from the University of Virginia in 1890.

Fifty-second Annual Session, Lynchburg, Va., October 18-21, 1921

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Original Communications

SOME OBSERVATIONS ON FEVER IN INFANCY.*

By C. G. GRULEE, M. D., Chicago, Ill.

I shall not attempt to discuss with you the various causes of fever but rather I shall endeavor to bring to your attention certain observations which I have made which I feel may have a somewhat deeper clinical significance than is at first apparent. The variation of temperature above or below a certain normal range is regarded by everyone as a sign of some change of a pathological nature within the organism. Fever or variation above this range is a result of a disturbance of one or both of two factors, heat production and heat radiation. Whatever the cause of fever may be these two factors must always enter in. Everyone is familiar with the various agents which have been assigned as causes of fever; chiefly among these there are perhaps bacterial agents, but there has also been a large group of investigators who have produced fever by injury to the nervous system.

While much has been said about the causes of fever and not a little about the mechanism by which fever is produced, very little has been written about the biological changes which take place in the production of fever. In other words, there has been very little attempt to explain how these causative agents act. This is undoubtedly due largely to the fact that it has been impossible to separate fever as a symptom and the conditions which are dependent on fever from the conditions which depend on the causative agent of the fever. That the fever itself may cause symptoms is not at all unlikely, but that several degrees of fever may be present without apparent symptoms is unquestionably true. The best example of such a fever, it seems to me, is the so-called inanition or transitory fever of the newborn. Here,

the infant will have a temperature of 102° or 103°, or even 104° without any apparent general disturbance. On the other hand, when this fever reaches 105° or 106°, then we begin to get muscular twitchings, rigidity and the anxious expression upon the face of the child. This would seem to indicate that while there may be little disturbance accompanying fever, if this fever reaches a high degree, it is practically always accompanied by definite clinical phenomena; whether or not these clinical phenomena are the results of the temperature or whether they are due to the agents which cause the temperature would, of course, be impossible with our present knowledge to state.

With these preliminary remarks I will present to you some observations on two infants which were made in the wards of the Presbyterian Hospital, Chicago. I shall ask you to indulge me to the extent of allowing me to go into details on these cases since I feel that such is justified if we are to draw any conclusions whatever from this work.

REPORT OF CASES.

CASE 1 (No. 132697).—George G., aged two months, entered the Presbyterian Hospital February 15, 1920. The complaint was vomiting and undernourishment.

History.—The child was born by forceps delivery with a birth weight of 7¾ pounds. Pregnancy had been normal. He was put to the breast but did not nurse well and was fed breast milk with a spoon for some days. After two weeks he was given a mixture of 9 ounces of certified milk, 6 ounces of water, 2 teaspoonfuls of dextrimaltose and 20 drops of milk of magnesia. This was later increased to 10 ounces of milk, 18 ounces of water, 1 level teaspoonful of dextrimaltose, and 4 teaspoonfuls of milk of magnesia. For four days previous to entrance he had been given Horlick's malted milk. The day before entrance certified milk was again tried.

The child had never regained its birth weight and vomited practically everything. The type

*Read by invitation at the fifty-first annual meeting of the Medical Society of Virginia in Petersburg, October 26-29, 1920.

February 17, the child vomited most of its food but seemed to retain enough not to lose weight.

February 18, the baby was rather constipated and still vomited.

February 19, peristaltic waves were seen passing over the stomach and there was projectile vomiting.

February 20, this peristalsis was much more marked as was also the vomiting which was definitely projectile.

Roentgen-ray examination indicated retention of food in the stomach; the stools were hard.

An exploratory laparotomy was done under local anesthesia but no tumor was found and the abdomen was closed.

February 23. During this time the child obtained as food 18 ounces (576 c.c.) albumin milk; $\frac{3}{4}$ ounce (24 gm.) dextrimaltose, six feedings of 3 ounces (96 c.c.) each. During this period there was no rise in temperature. The child received 6 per cent. dextrose solution, three times a day, beginning with the seventeenth. The child obtained from 1 to 5 ounces a day of this solution (32 to 160 c.c.). February 18, atropin sulphate, 1/1,000 grain, was administered hypodermically every eight hours. This was discontinued on the twenty-third. The stomach was washed before each feeding; this, too, was discontinued on the twenty-third.

The second period is the febrile period, which lasted from February 23 to March 7. During

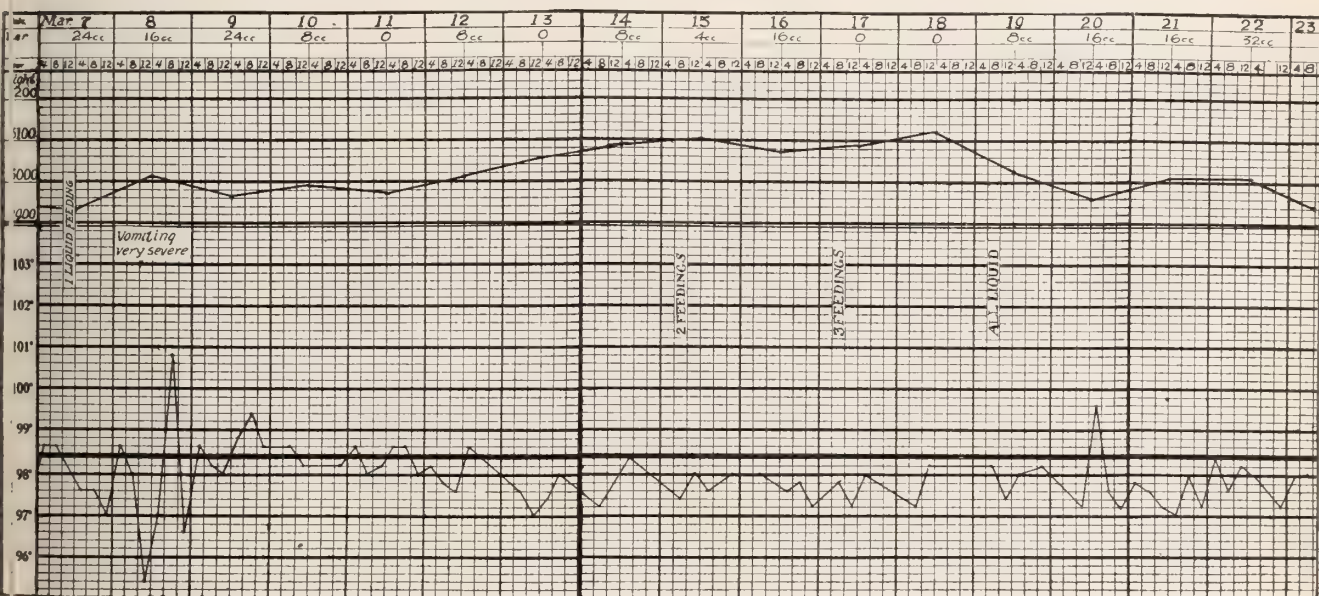


Fig. 3.—George G.; postfebrile period. Food: Each liquid feeding consists of whole milk, 64 c.c.; dextrimaltose, 8 gm.

February 21 and 22 the vomiting was still marked.

February 22, a continuous enema of 6 per cent. dextrose solution was given. This was continued through the twenty-third and the twenty-fourth.

February 25 the child began to retain food.

February 28, 55 c.c. of a 6 per cent. solution of dextrose was given subcutaneously.

Clinical Course.—The course of this case so far as temperature was concerned may be divided into the prefebrile period, the febrile period, and the postfebrile period. The prefebrile period extended from February 15 to

this time the child received food consisting of 8 ounces (256 c.c.) whole milk, $\frac{3}{4}$ ounce (24 gm.) dextrimaltose, 1 ounce (32 gm.) flour-ball, to which 8 ounces (256 c.c.) of water was added and the whole boiled down to a thick paste. Atropin was given, 1/1,000 grain, every four hours; strychnin, 1/1,000 grain, three times a day, both being given hypodermically. An attempt was made to give dextrose solution by the drop method rectally but without much success because the child retained very little of it. The strychnin was discontinued on the third, and on that day the atropin was ordered given only twice a day. Only small quantities

of water were given at this time, varying in twenty-four hours from 16 to 96 c.c. February 28, the child was given 55 c.c. of 6 per cent. dextrose solution subcutaneously.

The third or postfebrile period began March 7 and continued through to the twenty-third. During this period the paste was gradually replaced, one feeding at a time, with liquid, consisting of 2 ounces (64 c.c.) milk, and $\frac{1}{4}$ ounce (8 gm.) dextrimaltose. The first of these feedings was given March 7. March 15 two feedings were given; on the seventeenth three feedings, and from the nineteenth on all feedings were of liquid nourishment.

During this last period the temperature exceeded 99° F. three times. On the afternoon of March 8, after the child had shown a subnormal temperature, dropping following nourishment, the temperature rose to 100.8° F.,

third periods consisted in the fact that the quantity of water which the child took was very much reduced in the former. There was no other circumstance which was clinically evident which we could in any way connect with a rise in temperature. It should be remembered that this was an extremely emaciated infant, as the weight curve shows, that it had been subjected to a long period of reduction by vomiting, and that, hence, in all probability the water content of the body was greatly reduced.

CASE 2 (No. 133045).—Mary Z., aged 6 months, entered the Presbyterian Hospital, February 27, 1920.

History.—Born spontaneously with a birth weight of about 7 pounds. Breast fed for five months during which time her general condition was good. One month before entrance,

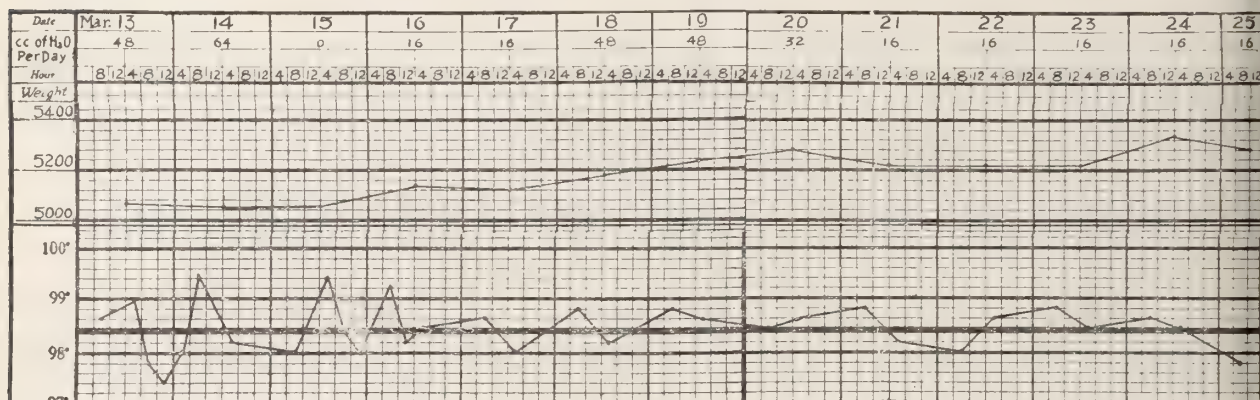


Fig. 4.—Mary Z. First period. Food, March 13: Albumin milk, 1,056 gm.; dextrimaltose, 32 gm. Five feedings of 224 c.c. each.

dropping immediately to 96.6° F. On the following afternoon, March 9, the temperature rose to 99.4° F., and on the afternoon of the twentieth the temperature at one time registered 99.6° F. With these exceptions, this period was in marked contrast to the period when the child received only a thickened paste. Throughout the treatment the child refused water, the total daily quantity never exceeding $\frac{1}{2}$ ounce (16 c.c.). The urine was negative on several examinations. February 16, the blood showed: Erythrocytes, 4,500,000; leukocytes, 7,500; hemoglobin, 75 per cent. Differential count: Small lymphocytes, 56 per cent.; polymorphonuclears, 44 per cent.

COMMENT.—Practically the only difference between the second period and the first and

the child had a cold and a slight cough. During the daytime the child had been vomiting. Its food at the time of entrance had been four feedings of cow's milk, three parts milk to one of water, with two teaspoonfuls of sugar per bottle, in addition to which had been given one cereal and one vegetable feeding. The child was apparently doing well, although there was a history of some vomiting. Two days before entrance the mother had noticed some discharge from the ear. Previous to this time the child had had no disturbance of any sort. Mother stated she was easy to take care of, took her food eagerly and slept well.

Family History.—This was the sixth child, the oldest being 14 years of age. Two miscarriages; children all apparently well; father alive and well. The mother, soon after the en-

trance of the child into the hospital, was taken to an insane asylum because of dementia praecox.

Physical Examination.—This revealed nothing abnormal, except that the child was poorly nourished, weight about 10 pounds. There was a somewhat purulent discharge from the right external auditory meatus. Other physical findings were negative.

The discharge from the ear ceased March 3 and never recurred thereafter. During the early days of the child's stay in the hospital its food consisted of 30 ounces (960 c.c.) albumin milk; 1 ounce (32 gm.) dextrimaltose, five feedings of 6 ounces (192 c.c.) each. This was increased to 33 ounces (1,056 c.c.) albumin

ary 27 to March 25, in all twenty-eight days, never rose above 99° F. During this first period, in addition to the food, the child obtained some water between feedings.

As medication during this first period, from March 13 to March 24, the child received a teaspoonful of cod liver oil and phosphorus twice a day. March 24 this was increased to three times a day and remained the same throughout the course. March 24 the child was given 1/1,000 grain atropin hypodermically, every four hours, and this was kept up for two days when the dose was reduced to 1/2,000 grain and this was continued until March 30.

The second period began March 25. The child was given food consisting of 15 ounces

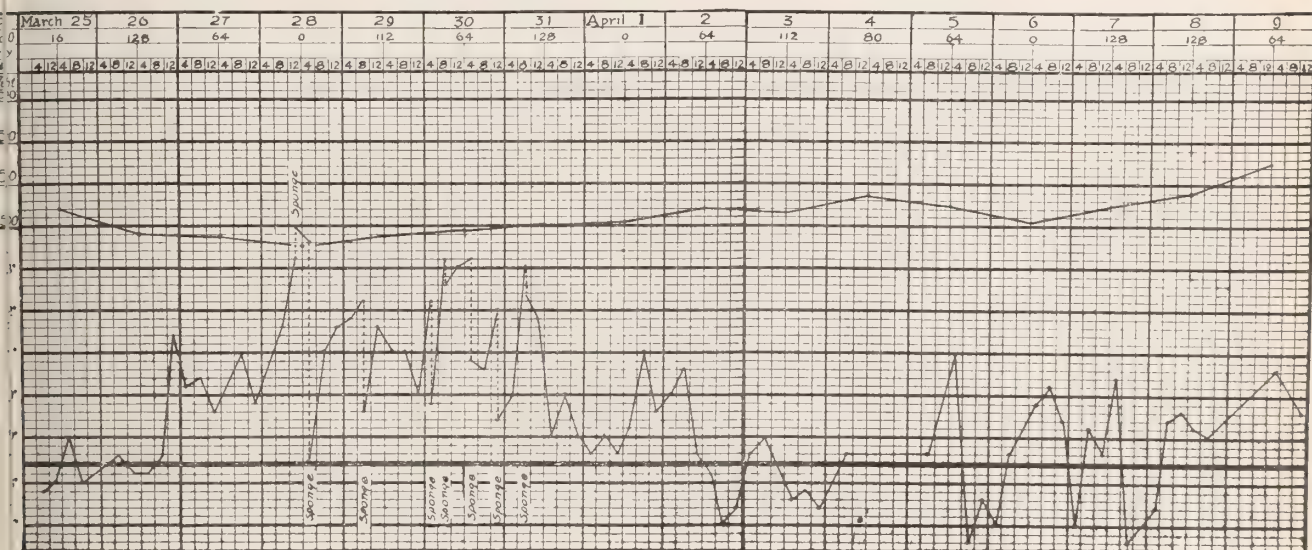


Fig. 5.—Mary Z. Second period. Food, March 25: Paste consisting of whole milk, 480 c.c.; dextrimaltose, 16 gm.; cream of wheat, 48 gm. March 26-28: Paste consisting of whole milk, 576 c.c.; dextrimaltose, 16 gm.; cream of wheat, 64 gm. March 28 to May 3: Paste consisting of whole milk, 640 c.c.; dextrimaltose, 24 gm.; cream of wheat, 64 gm.

milk; 1 ounce (32 gm.) dextrimaltose, five feedings of 7 ounces (224 c.c.) each on the ninth. Although the child had been vomiting more or less throughout its stay in the hospital, rumination was first actually noticed March 22, and the food was not changed until March 25.

Clinical Course.—From the time of its entrance to March 25 constitutes the first period in our history. During this period the temperature was nearly always within normal limits. March 2 it rose once to 99.4° F.; March 10 it rose once to 100° F.; March 11 it rose once to 99.6° F., and once to 99.2° F. March 14 the temperature was 99.6° F. once; March 15, 99.6° F. once; March 16, 99.2° F. With these exceptions, the temperature from Febru-

(480 c.c.) whole milk, 1/2 ounce (16 gm.) dextrimaltose, 1 1/2 ounces (48 gm.) cream of wheat, the whole boiled down to a paste and given in five feedings. March 26 this was increased to 18 ounces (576 c.c.) milk, 1/2 ounce (16 gm.) dextrimaltose, and 2 ounces (64 gm.) cream of wheat. March 28 this was still further increased to 20 ounces (640 c.c.) whole milk, 3/4 ounce (24 gm.) dextrimaltose and 2 ounces (64 gm.) cream of wheat. This latter feeding was continued until May 3.

Beginning the afternoon of March 26, the temperature became irregular and remained so until the afternoon of May 3. During this time the quantity of water consumed was very low. The only days when the temperature was

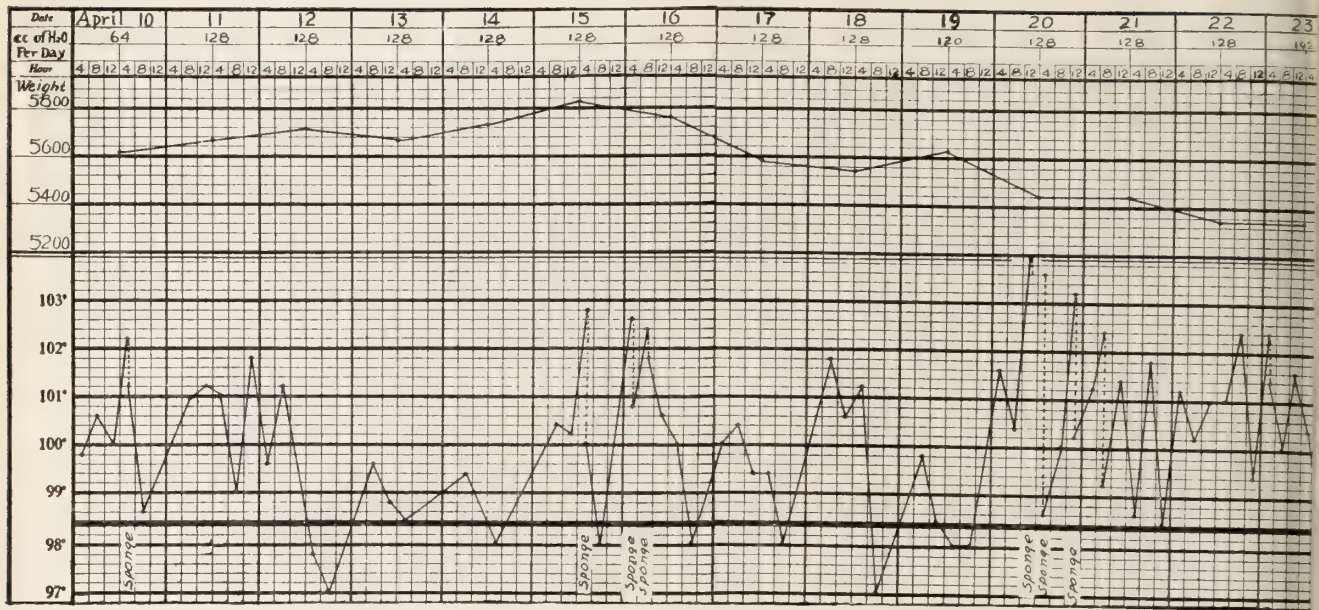


Fig. 6.—Mary Z. Second period (continued). Food: Same.

within normal limits were April 3 and 4. On these two days the quantity of water given was not in excess of that consumed in the other period.

The third period began May 3. At that time the child was given 20 ounces (640 c.c.) milk, $\frac{3}{4}$ ounce (24 gm.) dextrimaltose, 20 ounces (640 c.c.) water, five feedings of 8 ounces (256 c.c.) each. On the afternoon of May 3 the temperature showed a sudden drop to normal. May 4, in the afternoon, the temperature dropped to 95.2° F. and the child was in a state of collapse. The intern became alarmed and

ordered that the child be put again on thick cereal feeding. The condition was so alarming that the child was given camphorated oil, 8 minims, and strychnin sulphate, 1/500 grain, hypodermically. This was continued for two further doses and early in the morning of May 5 it was necessary again to give the child 8 minims of camphorated oil. When the child was seen by the attending man next morning, the liquid food was again ordered and by noon the temperature had dropped to 97.8° F., and in the afternoon it fell to 96.4° F.

This feeding was continued until May 10.

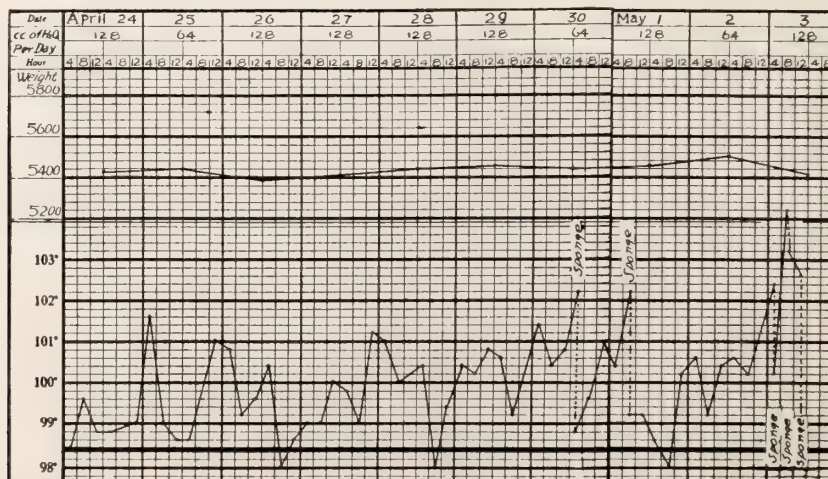


Fig. 7.—Mary Z. Second period (continued). Food: Same.

The temperature became markedly subnormal; on the eighth it rose to 99.4° F., then dropped to 96° F.; on the ninth, it dropped to 96° F.; the morning of the tenth it again rose to 99.4° F., and dropped to normal that afternoon.

In the fourth period, beginning May 10, the child was again put on the paste consisting of 20 ounces (640 c.c.) whole milk, $\frac{3}{4}$ ounce (24 gm.) dextrimaltose, 1 ounce (32 gm.) cereal in five feedings. This was continued until the fifteenth. During this period the child again showed a markedly febrile temperature.

May 15, when the fifth period began, the

then to push water, and the quantity, which for the previous ten days had varied between 32 and 96 c.c. per day, was increased so that the following quantities were given:

May 26..... 304 c.c. May 31..... 384 c.c.
May 27..... 400 c.c. June 1..... 328 c.c.
May 28..... 208 c.c. June 2..... 320 c.c.
May 29..... 308 c.c. June 3..... 448 c.c.
May 30..... 288 c.c.

The afternoon of the twenty-sixth, the temperature dropped to normal; on the twenty-seventh it was subnormal; on the twenty-eighth

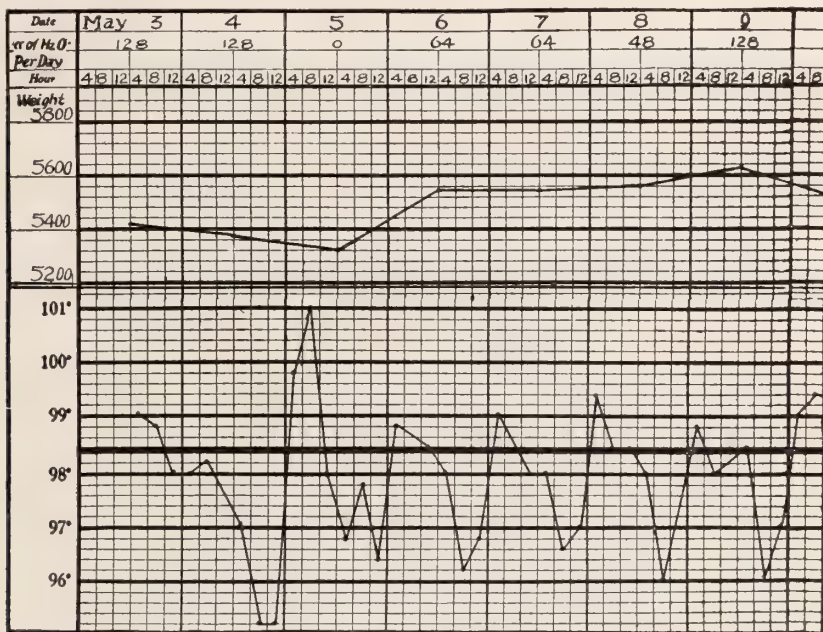


Fig. 8.—Mary Z. Third period. Food: Whole milk, 640 c.c.; water, 640 c.c.; dextrimaltose, 84 gm. Five feedings of 256 c.c. each.

child was put on food exactly the same as during the previous period (fourth), except that 20 ounces (640 c.c.) water was added and the whole was not made into a paste, and five feedings of 8 ounces (256 c.c.) each were given. The afternoon of May 15, the child again showed a marked drop in temperature, 96.4° F. This was followed by a slight rise to 100.6° F. the next day. The child was perspiring very freely. The temperature dropped to 96.4° F. on the seventeenth and remained low.

May 25 the food was again changed (sixth period), the same food being given as during the fourth period. The afternoon of May 25, the temperature rose to 101° F. and on the twenty-sixth it rose to 101.6° F. It was decided

it was normal. It was slightly above normal on the twenty-ninth, and the afternoon of the thirtieth it began to rise. From then on until June 3, the temperature remained somewhat high, though lower than in the previous period.

June 3 (seventh period), the food was again changed back to that of the fifth period. The temperature on the fourth dropped to 95.2° F. and remained subnormal with one exception until the fourteenth. On the ninth the temperature rose once to 101° F. This was a hot, humid day.

The quantity of water consumed during this period varied between 64 and 272 c.c.

During the next period (the eighth), from

June 14 to June 25, the same food was given as in the sixth period. June 15, the temperature rose to 101° F., but with the administration of water, 400 c.c. June 16, 336 c.c., and the seventeenth, 360 c.c. water were given and the temperature remained down. Water was restricted on the seventeenth so that the child after that received for this period no more than 96 c.c. per day, with the result, that the remaining part of this period the child ran a febrile temperature throughout.

June 24 (ninth period), the child was again

fully estimated by means of a Westphal balance.

BLOOD EXAMINATION.—The blood examination in each instance was made at 10 a. m., one hour after the ingestion of food.

TABLE 1.—BLOOD FINDINGS IN CASE OF MARY Z. DURING SIXTH PERIOD WHILE THE CHILD WAS ON LIQUID NOURISHMENT.

Date	Hemoglobin	Erythrocytes	Leukocytes	Sp. Gr. at 16 C.
6/10/20..	85%	4,790,000	6,700	1.056
6/11/20..	85%	4,864,000	7,650	1.052
6/12/20..	90%	4,998,000	8,600	1.062

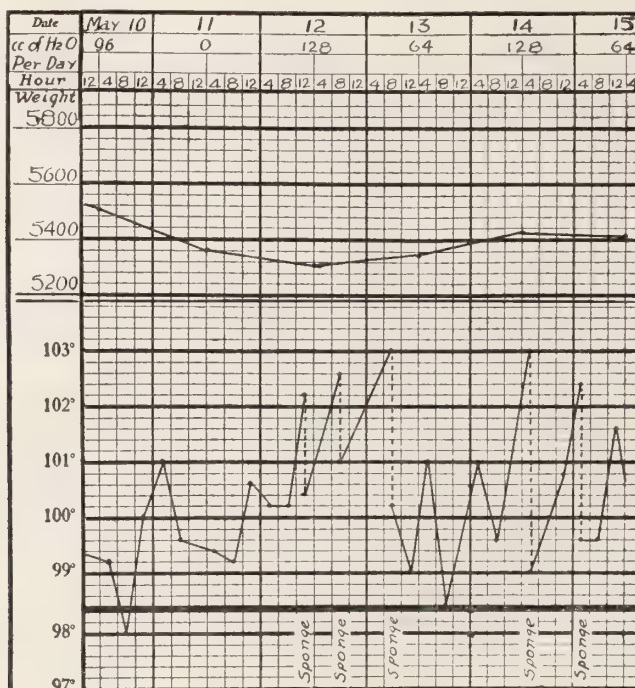


Fig. 9.—Mary Z. Fourth period. Food: Paste consisting of whole milk, 640 c.c.; dextrimaltose, 24 gm.; cream of wheat, 32 gm.

put on a liquid food of the same composition as during the seventh period. That evening, the temperature dropped to 97.2° F., remaining subnormal for three days thereafter, being within normal limits until the end of this period, July 2.

COMMENT.—The difference in temperature bore such direct relation to the water intake throughout this case that we decided to see if it were possible to obtain any confirming evidence by blood examination. For this purpose there were made careful estimates of the number of red and white cells, the hemoglobin, and the specific gravity. The specific gravity was estimated by the benzol-chloroform method, the specific gravity of the liquid being care-

TABLE 2.—BLOOD FINDINGS IN CASE OF MARY Z. DURING THE SEVENTH PERIOD WHEN THE CHILD WAS ON FOOD PASTE.

Date	Hemoglobin	Erythrocytes	Leukocytes	Sp. Gr. at 16 C.
6/19/20..	95%	5,300,000	9,980	1.072
6/20/20..	92%	5,460,000	9,700	1.069
6/21/20..	95%	5,330,000	9,000	1.070

COMMENT.—If we may regard the recent observations of Wimberger* as conclusive, this

observation of the difference in the concentration of the blood is quite remarkable in that in his observation on children between 7 months and 17 years of age, he found that the variation in the volume of the blood serum was

*Ztschr. f. Kinderh. 25:64, 1920.

INJURIES TO THE BILE TRACT IN CHOLECYSTECTOMY.

By W. H. GOODWIN, M. D., University, Virginia.

Until recently there has been much debate as to the relative value of cholecystectomy and cholecystostomy with the evidence ever increasing in favor of cholecystectomy. Surgeons were for a long time hesitant about removing a gall bladder unless very grossly diseased because the opinion was so universally held that sometime this gall bladder would be needed to divert the bile stream around a stenosed common duct into the intestine by a cholecystenterostomy. This need is very remote and, since the gall bladder is very much shrunk, thickened, and adherent in the vast majority of cases of stenosed common duct, it does not lend itself to cholecystenterostomy and, therefore, we should not be deterred in doing a cholecystectomy on this account.

The prevailing opinion seems to be that pancreatitis is better treated by cholecystectomy than cholecystostomy with possibly direct drainage of the pancreas itself. In the vast majority of cases, the gall bladder can be more safely removed from within out because by this method the cystic duct and cystic artery can be exposed, in the folds of the gastro-hepatic omentum, ligated and divided before the operative field is discolored and masked by the bleeding usually gotten when the gall bladder is first dissected from the liver. However, I am convinced that there are cases in which the exposure is so difficult and the gall bladder is so distended, or thickened and necrotic, that removal from without inward is the best technique. In these cases the peritoneum can be reflected from the gall bladder, on each side near the liver, and the gall bladder stripped from the liver by blunt dissection.

Richter says the peritoneal flaps should not be sutured over the denuded liver but simply pressed in place.

In case the gall bladder is much distended, aspiration is a great advantage.

O'Day, however, says "It is a grievous mistake to open a distended gall bladder before the exact point of the obstruction has been determined, for, the moment it is done, the hopeless surgeon has forced himself to grope within a darkness of his own making." W. J. Mayo lays emphasis on the relation of the

pelvis of the gall bladder and the cystic and common ducts.

To grasp the pelvis with a clamp and lift it up aids greatly in exposing the cystic duct. Eisendrath calls attention to the fact that the pelvis may lie on the upper instead of the lower side of the gall bladder.

Concomitant with the great increase in cholecystectomies, we have a great increase in the number of injuries to the hepatic and common bile ducts, and reports of these injuries are creeping into the literature. These injuries are usually not recognized at the time of operation. Cholecystostomy is usually an easy operation compared to cholecystectomy, which procedure must invade much deeper regions and expose much more vital structures to injury.

The question of drainage after cholecystectomy is still unsettled. Richter and Buchbinder recommend that no abdominal drainage be used after cholecystectomy except in the most virulent infection. They also close the common duct quite securely after choledocotomy, omitting all drainage. Halstead recommends that drainage of the common duct be done by passing a small rubber tube through the cystic duct into the common duct. He says drainage is insignificant after removal of the tube from the cystic duct, and after all the chief thing to be accomplished is relief of tension.

We have taken Dr. Halstead's suggestion and drained all of our common duct cases through the cystic duct and are much pleased with the results. We also prefer a small cigarette drain in all cholecystectomies because a small percentage of cases will leak from the ligated cystic duct.

Willis reports good results in cholecystectomy without drainage and advises that the cystic duct stump be excluded from the peritoneal cavity.

Judd states that it is not necessary to remove all of the cystic duct, but, on the other hand, Behrend cautions against leaving a long cystic duct because of the possibility of the formation of a pseudo gall bladder. I think this happened in the third case reported in this paper.

Surely there are a few cases in which the surgeon meets with such difficulties in doing a cholecystectomy that injury to the bile ducts is inevitable, but the vast majority of these in-

juries, I feel sure, are due to errors in technique. One of the most common errors, I believe, is undue traction on the gall bladder which angulates the common duct. Of vast importance in doing a cholecystectomy is a thorough knowledge of the normal anatomy of this region, and the surgeon who would avoid doing serious injury should be familiar also with the anomalies of the bile ducts and blood vessels of this region. Eisendrath has set forth these variations from the normal in a very comprehensive way and I quote from him freely.

The plexus of veins and arterioles which lie on the surface of the common duct is frequently neglected and causes troublesome hemorrhage. The right hepatic artery may course in front instead of behind the hepatic duct. It may parallel the cystic duct or wind around the hepatic duct. The gastroduodenal artery may pass across the front of the common duct or send a branch across the common duct. The cystic artery may arise on the left side of the hepatic or common duct and cross in front or behind one of these in its course to the gall bladder. The cystic artery may arise from the left hepatic artery, main hepatic or gastroduodenal artery. In twelve per cent of individuals there are two cystic arteries and they do not always arise from the right hepatic. Eisendrath reports an injury to the hepatic duct by grasping it with forceps in the attempt to catch a bleeding, retracted cystic artery, after one had already been ligated.

The cystic duct and hepatic duct run a parallel course in 17% of cases before they unite to form the common duct and this union may not take place till one-half or one centimeter above the ampulla. The right hepatic duct may empty into the gall bladder or cystic duct. There may be four or five instead of one hepatic duct. The cystic duct may make a spiral twist around the hepatic duct before they unite. Behrend says the cystic duct joins the hepatic duct on the medial side in 72% of subjects examined and, out of 62 specimens examined, 33% of variations of vessels and ducts were encountered.

Unfortunately, most injuries of the bile ducts are overlooked at the time of operation and either a permanent biliary fistula is established or the stricture of the injured duct results in a progressive cholemia, necessitating

many times one of the most hazardous reconstructive operations in surgery.

When the injury of the hepatic or common duct is recognized at the time of the operation, an end-to-end anastomosis of the duct can usually be successfully done. Unless the duct is greatly dilated, the anastomosis should be done over a straight rubber tube or over a T-tube as used by Mayo. This suture line should always be covered with omentum.

Should a section be taken out of the duct leaving such a defect that mobilization of the common duct and duodenum will not suffice to bring the ends of the severed duct together, the proximal end of the distal segment of the duct should be ligated and covered with peritoneum and the distal end of the proximal segment should be implanted into the duodenum or stomach, preferably the duodenum. The mucous membrane of the duct should be accurately sutured to the mucous membrane of the duodenum or stomach over a rubber tube. C. H. Mayo has modified the simple tube used by Sullivan by employing the bell end of an ordinary male catheter over which are cemented two small rings of rubber cut from a larger catheter and so placed that one ring will be in the duct and one in the duodenum, thereby fixing the tube much more securely than can be done by simply suturing. The tube is no doubt eventually passed but remains in situ long enough to greatly minimize the danger of stenosis.

In extensive injuries of the main bile duct resulting in stricture near the fissure of the liver, Mayo would anastomose the greatly dilated hepatic duct to the duodenum with a two-row suture, on the general principle of gastro-intestinal union, covering the junction with omentum. Walton has reconstructed the bile tract by dissecting down a flap of the anterior duodenal wall and suturing this around a rubber tube, one end of which is in the duct and the other protruding into the duodenum. By dissecting down the duodenal flap the suture line is on the posterior aspect of the rubber tube and, to correct this, Gunsburg and Speese dissect up the flap of the duodenum throwing the suture line on the anterior aspect of the tube. This impresses me as quite an ingenious method of reconstruction, but I would be fearful of a duodenal fistula

which should be carefully guarded against in all such operations.

In order to lessen the danger of ascending infection and leakage, Mann constructs a papilla in the duodenum by the use of three tiers of circular sutures in the duodenum around the rubber tube. Eliot recommends that the rubber tube be inserted obliquely into the duodenum after the Witzel method of gastrostomy in order to minimize the danger of ascending infection. O'Day divided the jejunum, anastomosed the distal end of the proximal segment into the side of the distal segment and then anastomosed the proximal end of the distal segment into the bile duct. Rockey, quoted by O'Day, severed the lower portion of the stomach, implanted the proximal end of the divided common duct into the distal end of the stomach, closed the proximal end of the stomach blind and then did a posterior no-loop gastroenterostomy.

In those cases where a considerable portion of the main bile tract is destroyed and it is not possible to mobilize the upper segment and implant it into the duodenum, stomach or jejunum, the Sullivan method of reconstruction is the one of choice. One end of a rubber tube is placed in the lumen of the upper segment of the duct and the other end is passed through the lower segment to project into the duodenum, or, if this is not possible, the tube is passed through a small opening made into the duodenum. All the exposed portion of the tube is now covered with omentum which forms a fistulous tract.

In his first work, Sullivan attached a small rubber sponge to the duodenal end of the rubber tube to facilitate its passage, but later experiments demonstrated that this procedure was unnecessary.

Instead of the Sullivan tube, Mayo uses a T-tube which can be removed. Von Stubenrauch divided the jejunum, anastomosed the distal end of the proximal segment to the side of the jejunum and then brought the end of the distal segment out subcutaneously and anastomosed it to the biliary fistula.

Murphy, quoted by Eliot, made use of a biliary fistula by invaginating it into the exposed distal end of the common duct.

The use of autogenous grafts in bile duct reconstruction has been unsatisfactory and Horsley demonstrated that a transplanted,

everted vein would eventually become occluded by contraction resulting from the irritating action of the bile.

Eisendrath has been able to collect fifty-one cases of operative injury to the common and hepatic bile ducts and ventures the opinion that this number does not represent all that have occurred. I am in thorough agreement with this opinion and wish to add two more to this group. During the past thirteen years there have been 486 operations on the gall bladder done in the University of Virginia Hospital. Of this number there were 279 cholecystostomies and 207 cholecystectomies. There were two cases of operative injury to the common duct in this series of cholecystectomies. I do not want to burden you with a lengthy report of these two cases but would like to present the important features.

CASE I. T. J., negro woman, 54 years of age, admitted to University of Virginia Hospital, November 9, 1912.

Except for pneumonia in early life, the patient never had an acute illness till three years before admission. She never had typhoid fever. She has always been constipated, taking a laxative nearly every night.

About three years before admission, the patient, early one morning, had a very severe pain beneath the right costal margin and this pain radiated backward and upward to the right shoulder.

This attack lasted two or three days and was accompanied by marked nausea and vomiting. The patient said she had a high fever at that time but did not recall being jaundiced. Since this attack, the patient had to spend about two weeks in bed every month on account of the severe pain, nausea, and vomiting. During the intervals, the patient could work but was never comfortable and had much gastric disturbance. The patient was a fleshy woman and, on examination, the abdomen was found to be quite tympanitic. No mass, but tenderness could be made out on abdominal examination, and her family physician said he found a distinct mass below the right costal margin during the last attack, which was a severe one, and from which the patient had recently recovered.

The abdomen was opened through a high right rectus incision and dense adhesions were found binding the thick and shrunken gall

bladder intimately to the duodenum, stomach, and transverse colon. After separating these adhesions a large stone could be distinctly palpated, apparently in the gall bladder. An effort to expose the cystic duct in the gastro-hepatic omentum failed and it was thought best to remove the gall bladder by dissecting from above downward. This dissection was carried through dense scar tissue with very slight bleeding.

The exposure was difficult and, in attempting to expose the cystic duct, undue traction was put on the gall bladder which angulated the very mobile common duct giving it the appearance of a dilated cystic duct.

The common duct was cut across and this demonstrated that the stone was lodged in the cystic duct at the junction with the common duct and that the gall bladder was contracted around the stone. The section of the common duct was verified by passing a probe through it into the duodenum.

Fortunately, the common and hepatic ducts were dilated and quite mobile allowing resection of that part where the stone was impacted. The proximal and distal ends of the divided duct were approximated and an end-to-end suture with chromicized catgut done.

A linear incision was then made into the hepatic duct above the suture line and a small tube placed and fixed with a chromic gut suture. Cigarette drains were inserted around the tube and suture line and the abdomen closed. On the eighth day following operation the tube was removed.

Twenty-two days following operation all drainage of bile had ceased and the patient was in good condition. Stools continued normal and, one month from date of operation, the patient left the hospital in excellent condition.

A communication of January 28th, 1921, nine years after the operation, states that the patient has never been jaundiced but still suffers from constipation, headache, and indigestion. She has had no severe attacks of gall stone colic.

CASE II. Mrs. M. C., sixty years of age, was admitted to the University of Virginia Hospital, July 30th, 1918, complaining of "pain in the stomach running to the right side and shoulder blade." The patient has never had typhoid fever but has had the usual diseases of childhood.

During a period of thirteen years previous to admission to the hospital, the patient has been having about six attacks each year of severe gall stone colic. The patient never noticed any abnormal color of her stools but, during one attack about ten years previous to admission, she says she was jaundiced. On admission the patient's temperature was normal, abdomen flat, and no masses could be made out but there was distinct tenderness over the gall bladder region on deep pressure.

The abdomen was opened through a high right rectus incision and the general cavity packed off with gauze pads. The gall bladder was moderately distended, with thick walls and contained numerous gall stones ranging from a fourth to a half inch in diameter. The common duct was free and the pancreas soft. The cystic duct was somewhat constricted by adhesions forming a goose neck.

Cholecystectomy was distinctly indicated and, in removing the gall bladder from within out, the common duct was cut, thinking it to be the cystic duct. The distal end of the common duct was carbolized and ligated with double ligatures of chromic catgut. The proximal end of the common duct, along with the remaining portion of the cystic duct, was sutured into the duodenum, as the common duct had been cut about three-eighths of an inch below the junction with the cystic duct. The anastomosis was done with chromic catgut, number 0, and fine silk.

One cigarette drain was inserted and the abdominal incision closed.

The patient made an uneventful convalescence and left the hospital in excellent condition. There was never any leakage of bile or duodenal contents. The operator thinks that the extreme mobility of the common duct was a contributing factor toward the accident.

A communication received from the patient on February 1st, 1921, three years after operation, states that she has been quite well and free of gall stone attacks.

The third case I wish to present has for its interesting feature the closure of a permanent biliary fistula and reconstruction operation.

CASE III. Mrs. E. C., white woman, thirty-six years of age, entered the University of Virginia Hospital, on October 26th, 1920.

The patient has had the usual diseases of childhood, pneumonia four times, but never had typhoid fever.

In 1913, the appendix was removed and, in 1918, she had a hysterectomy for a fibroid tumor of the uterus. Following this operation she had femoral thrombosis.

In December, 1919, the patient had a severe gall bladder attack and a cholecystectomy was done at this time in another hospital. The patient was informed that her gall bladder was badly diseased and contained two large stones. The patient states that she drained bile through a rubber tube for one week and after the tube was removed she continued to drain bile seven more weeks. It is more than probable that the common duct was explored at this time and drained.

From this time till June, 1920, the patient drained no bile, the stools were of normal color, and she was able to do her household work in comfort. During the month of June, 1920, the patient became jaundiced and the stools assumed a clay color. The jaundice steadily grew worse, appetite failed, and there was pain and tenderness in the right hypochondriac region.

On physical examination, very deep jaundice was noted, and the general appearance was that of a very ill person. There was found enlargement of the liver and its margin could be palpated about four centimeters below the costal border. A very tender mass, simulating a much distended gall bladder, could be palpated below the liver margin. Temperature on admission was 102° and pulse 118.

A high right rectus incision was made, excising the cicatrix of the former operation, and on entering the abdominal cavity many adhesions were found.

The mass mentioned above was adherent to the liver, duodenum, stomach, and transverse colon. The wall of this mass was necrotic and its contents on aspiration were a brownish, mucous fluid. This mass was quite likely a much distended cystic duct, producing a pseudo-gall bladder, which was easily removed.

The common duct could not be identified but, quite near the transverse fissure of the liver, a much distended hepatic duct was found. The duct was opened at this point and a copious flow of bile ensued. No stone could be found in the hepatic duct and the duct below the dilatation could not be probed on account of a dense stricture.

The patient's condition would not permit of any further procedure and, after fixing a rubber tube in the hepatic duct and surrounding it with iodoform gauze, the abdominal incision was closed.

The patient made a very satisfactory convalescence and at the termination of four weeks she left the hospital, discharging all the bile through the fistula and the jaundice had almost disappeared.

Since the operation on October 28, 1920, the patient has shown marked improvement; she has gained some weight, all jaundice has disappeared, and in every respect she seems to be in excellent condition for some operation of diverting the bile into the intestinal canal. The stools have been continuously clay colored and there is no doubt all the bile has been discharged through the fistula.

It was determined to dissect out the fistulous tract, using it as a guide to locate the opening in the hepatic duct. Realizing from the previous operation that the opening in the hepatic duct was very near the transverse fissure of the liver, hope was nevertheless entertained that, after dissecting out the fistulous tract, the duodenum or stomach could be directly anastomosed to the hepatic duct, or that the duct could be reconstructed after the Sullivan method.

The operation was decided upon on February 4, 1921, three months after the previous operation. An elliptical incision was made, excising the scar of the former operation, and the abdominal cavity entered without encountering much difficulty from adhesions.

The biliary fistula was intimately adherent on one side to the under surface of the liver and as intimately adherent to the duodenum on the opposite side. After carrying the dissection of the fistulous tract well down, the adherent wall of the duodenum became indurated and friable. To have carried the dissection of the fistulous tract any further would have no doubt seriously injured the duodenum and repair would have been very doubtful in the presence of the very indurated and friable walls. The biliary fistula had been well open for over three months and would now easily accommodate a number 18 rubber catheter.

The portion of the biliary fistula which had been dissected free was excised. Opposite the lumen of the fistula an opening was made in

the duodenum and already the pathological process had completed a firm anastomosis between the duodenum and the fistulous tract on the posterior and partly on the lateral aspects. One end of a flexible rubber tube with a lumen of one-eighth of an inch in diameter was inserted into the fistulous tract for about one and one-half inches and the other end, about two inches in length, inserted through the opening into the duodenum. The tube was fixed to the fistulous tract and to the duodenum with a No. 1 chromic catgut suture. The wall of the duodenum near the tube was neither indurated nor friable and the duodenum was now brought up over the rubber tube and fistulous opening and sutured to the under surface of the liver with two tiers of chromic catgut sutures. The surface of the liver at this point was smooth and covered with a thick and strong layer of peritoneum which held the sutures quite well. The suture line was then covered with a vascular omental flap held in place by chromic catgut sutures.

One cigarette drain was placed near the anastomosis, one in the kidney pouch of Morrison and the abdominal wound closed.

The patient has been quite comfortable since operation and there has been no leakage of bile or duodenal contents. Every stool has been well colored with bile.

The original drains were removed on the fourth day and now there is only a wick of gauze placed just through the abdominal wall. Two weeks have elapsed since operation and the stools have continuously been normal. The skin is clearer than it has been for a long time and appetite and digestion are quite good.

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THE SURGICAL TREATMENT OF DISEASES OF THE GALL-BLADDER.*

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The operative results in the treatment of diseases of the gall-bladder and its accessory extra-hepatic ducts are not perfect; yet, undoubtedly, surgery is to be advised, for, in the present stage of our knowledge, neither external application nor internal medication offers the slightest hope. It is to be regretted that the ingestion of olive oil converts our patients temporarily into soap factories, with an output in the stools of handfuls of the erroneously called "Gall-Stones", which can be collected and pointed out as evidence of the efficacy of our treatment. Disinfectants are not known, having selective action on the bile, by the use of which the suspected causative agent, viz: the infection of the gall-bladder and its ducts, may be cleaned up, for, not even the widely used hexamethylenamin, when given in enormous doses, is followed by the presence of formaldehyde in the bile.

Along with the word "Scattered", so often applied as the desideratum of the medical treatment of lumps in a woman's breast, acute attacks of pain in the lower right quadrant of the abdomen, and other strictly surgical conditions too numerous to mention, the misnomer "Indigestion" should be relegated to the days that are past and gone. If used at all, it should be only as the description of a group of symptoms, the true cause of which must be sought for and remedied. In no case is

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it to be considered as the name of a disease which is to be treated.

The gall-bladder, the hepatic ducts, or the common duct may be literally packed with stones, the gall-bladder entirely filled with purulent material, or with its walls gangrenous, or even a malignant growth slowly, but surely, progressing past the operative stage without the presence of jaundice. How foolish it is, then, to allow the absence of this symptom, which is but the evidence of the more or less complete obstruction to the out-flow of bile, influence us to delay our diagnosis. To go a step further, we must remember that neither pain nor the presence of stones is necessary before operative interference is indicated, for, according to Barker, "It is not the diagnosis of gall-stones that is most important, what we desire most to know is whether or not stagnation and infection exists anywhere in the biliary tract."

I would add to this, as a possible causative factor in the production of gall-stones, the theory of the existence of the hypercholesterinemia diathesis as suggested in the work of Rothschild and Rosenthal, and a further statement that, with sufficient drainage, the cholesterol content of the blood will return to normal.

It would seem that all this is rather a discussion of some of the symptoms and possible causes of gall-bladder diseases rather than of their surgical treatment. It is not, but only a plea for quicker diagnosis, less medical treatment, or rather procrastination, and earlier surgical intervention.

Lyon's method of promoting drainage by means of repeated irrigations of the duodenum with magnesium sulphate solution, based on Metzger's discovery that a relaxation of the sphincter like muscle of Oddi at the ampulla of Vater can thus be caused, may yet remove the treatment of gall-bladder diseases from the realms of surgery, or, at least, such of these diseases as are dependent on the presence of stasis, infection, or the result of the combination of these two, viz: stones. Before this much-to-be-desired result can be hoped for, however, means for making our diagnosis before the formation of stones too large to pass through the ducts must be given us.

In his article on "Operation and Re-opera-

tion for Gall-stone Diseases," Deaver reports, in one series of 1,000 cases, 4.07 per cent. re-operations, in another series of 800 cases, 8.5 per cent. re-operations. In 51 of his own cases there were 36 recurrences after cholecystotomy and 15 after cholecystectomy. Later he states that, after cholecystectomies, the percentage of recurrences was 1.3, while after drainage operations the percentage was 10. The causes for re-operation he lists as follows:

For Recurrence of Stones.....	26
For Cholecystitis	27
For Fistulae	11
For Common Duct Obstruction.....	10
For Chronic Pancreatitis	8
For Cholangitis	6
For Pyloric Obstruction	5
For Dilatation of Ducts.....	5
For Carcinoma	4
For Stricture of the Ampulla of Vater..	2
Adhesions were encountered in 39.	

Even in view of this report which shows a far from perfect result in the treatment of these cases, operation is not only the method of choice, but the only hope for a complete cure.

It is not wise, on account of the possibility of spreading the existing active infection, to operate during an acute attack. Pain should be relieved and relaxation induced by hypodermics of morphine, the application of ice bags, and absolutely no food by mouth. If it is necessary to evacuate the bowels, enemata are indicated rather than purgatives by mouth. This will usually make the much-to-be-preferred interval operation possible. In thus temporizing with an acute attack, due consideration must be given to the possibility of the presence of a gangrenous, or even ruptured, gall-bladder or duct. If even the imminence of such a condition of affairs is suspected, immediate operation should be performed.

A severe grade of infection may exist within the gall-bladder with no marked increase in the septic factor of a blood count unless the inflamed viscus is surrounded by an adherent omentum, or the infection has involved adjacent structures.

The position of the patient is most important. A sand bag or, preferably, an inflated, cylindrical, rubber bag placed under the patient's back, at the lower edge of the thoracic cage, renders the field of operation, especially

the ducts, much more accessible. The rubber bag is softer for the patient and, in addition, can be emptied of air on the completion of the operation without moving the patient or disturbing the dressings. The removal of the support simplifies the closure of the wound. Again, the drains must be placed with the support removed, or the change of the position of the incision into the duct, from close to the skin incision to its normal distance from it, will leave the drains no longer in contact with the point to be drained. The inclination of the patient should be slightly downward toward the feet, in order that the intestines may have a tendency to gravitate into the pelvis and lower abdomen, and thus be more easily packed away from the field of operation.

Several incisions have been suggested combining free access to the gall-bladder and ducts with conservation of the nerves and muscles of the abdominal wall. The right rectus incision gives good exposure and, with careful closure, does not result in post-operative hernia. If more exposure is needed, the right rectus can be converted into a Mayo-Robson by extending its upper extremity inward and upward through a portion, or all, of the right rectus muscle. Kocher's incision runs parallel with the costal margin and about one inch from it. That of Bevan adds to Mayo-Robson's a further extension from the lower end of the wound toward the right, both upper and lower extensions being slightly curved to produce the so-called "S" shape. Moynihan describes the additional incisions of Don, Perther, Courvoisier, and Kehr. He further calls attention to the fact that a long skin and fat incision adds much to the exposure secured by a muscle incision comparatively short without taking away from the strength of the abdominal walls. This is especially true in the case of fat people with thick abdominal walls.

Cholecystotomy, with removal of stones and subsequent closure of the opening in the gall-bladder, is to be condemned. Kelly states, however, that this operation is still practised by no less an authority than Kocher.

Cholecystotomy, with drainage, consists in exposing the gall-bladder, thoroughly packing off the surrounding viscera with gauze pads, aspirating the bile with trocha and cannula, in-

cising the fundus, carefully removing all stones, and inserting a large sized, cuffed, rubber tube. The opening in the gall-bladder is closed tightly about this tube with catgut stitches, at the same time controlling the bleeding, and one or more including the wall of the tube in order to anchor it in place. It is advisable so to place these stitches that the raw edge of the gall-bladder incision will be inverted into the lumen of the gall-bladder so that when the tube comes away, which will be about the ninth day, peritoneal surfaces will be left opposed to each other, thus promoting a more rapid closure of the resulting biliary fistula.

Care is to be taken, during the aspiration of the bile, that the resulting collapse of the gall-bladder does not leave areas of the surrounding structures unnecessarily exposed.

I have described the steps of this operation rather in detail although, like Meredith's method of closure of the gall-bladder following the removal of stones, it is fast becoming obsolete. It is still the method of choice in the hands of those not thoroughly trained in surgical procedures, when the condition of the patient, and of the operative field, renders more radical measures unsafe, when the pathological condition, as, for example, stricture of the common duct due to carcinoma of the pancreas, indicates the necessity for a side-tracking of the bile by an anastomosis between the gall-bladder and the stomach or the duodenum, or when its removal is operatively impossible. Otherwise, it is now almost universally conceded that cholecystectomy is to be preferred.

This operation consists in the ligation of the cystic duct fairly close to the common duct, and, after dividing it, a ligation and division of the cystic artery close to the gall-bladder. The peritoneum is then split up each side of the gall-bladder which peels easily from its bed. The peritoneal flaps are allowed to fall back, thus covering in the raw area left by the removal of the gall-bladder. A rubber tube drain is usually placed down to the ligated stump of the cystic duct and a small cigarette drain placed against the flaps of peritoneum to hold them in closer approximation with the bed of the removed gall-bladder. Add to this, if you choose, the method proposed by Willis and others of doubly ligating the cystic stump, covering it with peritoneum, and completely

closing the abdominal incision without drainage, and we have the ideal operation. The infected gall-bladder and cystic duct, either one or both containing stones, have been removed without opening and, therefore, without the possibility of spreading the contained, infected bile, and the danger of post-operative adhesions minimized by the omission of drainage. However, until further reports have made me ashamed of my timidity, I will continue the use of a safety valve in the shape of a drain, considering the risk of troublesome post-operative adhesions as less than that of the slipping of a ligature on the stump of the severed cystic duct.

In performing this operation, as in all operations on the ducts, invaluable aid is given by the rotation of the liver outward and to the right as proposed by Mayo-Robson.

Were it not for the close relationship of the various ducts and vessels and, especially, because of the frequent wide departure from the normal in number, size, course, and location of both arteries and ducts, the operation would be easy. In their discussion of these abnormalities, Eisendrath and Behrend have called attention not only to the possibility, but almost the certainty, of sooner or later having troublesome hemorrhage from the unligated part of a double cystic artery, death from the ligation of a misplaced hepatic artery, or dangerous stricture from the wounding or ligation of an abnormal hepatic or common duct, and other unfortunate probabilities too numerous to mention.

A correct understanding of these occasional anatomical abnormalities, plus a proper exposure of the ducts and arteries, is essential. The exposure is obtained by opening the right free border of the hepato-duodenal ligament. Through this incision the cystic duct and cystic artery can be seen and identified even in the presence of abnormalities. For this same reason, block ligation of the cystic duct and artery, as well as the method of freeing the gall-bladder from above downward, is not the safer course.

Mayo calls attention to the troublesome hemorrhage from the raw surface of the liver following cholecystectomy in acutely infected cases and advises splitting the gall-bladder by two lateral incisions, turning down the anterior flap, removing the mucous membrane from the posterior section, and leaving still

attached to the liver the outer coats of the posterior wall.

This same method is to be adopted in those cases in which adhesions render cholecystectomy unduly difficult or dangerous.

In the operation of choledochotomy, first portion, the outward rotation of the liver, as described above, is almost a necessity. This step brings the ducts into plain view. The common duct is identified and, if a stone is present, this is located by palpation. Before an incision is made into the identified duct, it is wise to aspirate with a fine hypodermic needle to make assurance doubly sure. Two stay sutures are then placed in the walls of the duct, immediately over the stone, if it is in, or can be moved into, a suitable location. An incision is made into the duct, the stone removed and a rubber drainage tube inserted. Care must be taken that no abnormally placed artery lies anterior to the duct, the wounding of which may cause severe and troublesome hemorrhage.

Even here, Richter and Buchbinder advise, in selected cases, that the incision in the common duct be closed tightly with fine needle and suture material and the abdominal wound be closed without drainage. In choledochotomy, even more strongly than in cholecystectomy, the use of one of the various forms of tubes for drainage appeals to my sense of the fitness of things. A straight rubber tube inserted into the opening and turned up toward the hepatic duct, anchored by a catgut suture, which is used also to close the incision in the duct tightly about the tube, answers splendidly. T-tube that will not interfere with the passage of bile into the duodenum, double drainage tubes, and other forms, are recommended by various authors.

The same procedures are to be adopted when an incision into the hepatic ducts is rendered necessary.

In a great proportion of these cases, the operation of cholecystectomy is combined with that of choledochotomy. In this connection it is interesting to note the observation of Courvoisier, quoted and agreed to by Mayo, that in obstruction due to common duct stone 84% show atrophic gall-bladders, while in obstruction due to pancreas or ampulla 92% show dilated gall-bladders. In the first, cholecystectomy would be advisable, while in the latter a cholecystenterostomy would be indicated.

Jacobson quotes that 85% of all pancreatitis cases have gall stones, and 20% have common duct stones, also that 7% of gall stones have pancreatitis. Since drainage of the duct is indicated for the relief of pancreatitis, we have another argument against the method without drainage.

If the stone is impacted in the second portion of the duct and cannot be brought up into the first position, an incision is made into the peritoneum to the outer right side of the duodenum and this is turned to the left, exposing the retro-duodenal portion of the duct, the stone removed, the incision in the duct carefully closed, and drainage established through a second incision in the first portion.

For stones impacted in the ampulla, or the third portion of the common duct, the trans-duodenal route is the method of approach. In this case an incision is made in the long axis of the duodenum, opposite the ampulla of Vater, the ampulla dilated or incised and the stone removed. No closure of this splitting of the ampulla is necessary. The incision in the duodenum is closed as usual. Drainage, when indicated, may be established through an opening in the first portion of the common duct.

Attention has been called above to the danger of damaging one of the hepatic ducts, or, especially, the common duct, in the operation of cholecystectomy. The present popularity of this operation renders such accidents more frequent. The results range from slight stricture of the unintentionally wounded duct to complete destruction of portions of it. The treatment consists in removal of the damaged portion and end-to-end anastomosis over the buried tube of Mayo. In this connection, Downes states that the common duct will regenerate in 35 days if one-half the circumference is anastomosed. The tube may remain buried for months or even years, or be promptly passed and give rise to no trouble. Eisen-drath calls attention, in repair of the ducts, to the use of the omentum where the destroyed duct tissue makes a gap inevitable. If an end-to-end anastomosis be not possible, then the proximal end of the duct is to be inserted into an opening in the mobilized duodenum, if possible; if not, then into the stomach. In this, Mayo states that the end of the duct can be sutured to the mucous membrane. In this operation, also, the buried rubber tube is to be used.

In an anastomosis between the fundus of the gall-bladder and the stomach, the gall-bladder is inserted into the opening rather than attempting an edge-to-edge union.

In malignant growths the entire involved area must be removed. The results, as regards permanent cures, have not been brilliant. Where side tracking operations for obstruction to the flow of the bile, due to malignancies, are possible, life is prolonged and relief afforded.

It is to be remembered that long continued or deep jaundice with its resulting marked delay in the coagulation time of the blood, or subcutaneous or submucous hemorrhages, contraindicates operation on account of the certainty of fatal post-operative bleeding. Blood transfusion pre-operatively to prevent bleeding, or post-operatively to check the oozing, is of marked benefit. Whipple reports even better results from the intravenous injection of from 200 to 500 c. c. of a 0.2% solution of calcium lactate. This drug is used per os for the same purpose but with doubtful effect.

Re-operations, where dense and extensive adhesions are present, are extremely difficult. I have lately had such a case in a woman 60 years of age. The scar of the old right rectus incision was removed and the abdomen entered with difficulty by a continuation of the incision upward. The liver extended two fingers' breadth below the costal margin and was strongly adherent to the anterior abdominal wall. After carefully freeing this, the fundus of the atrophied gall-bladder was finally located. The liver could not be rotated, while widespread and dense adhesions prevented the usual exposure of the common duct. Through the fundus, the gall-bladder was opened into and found to contain no stones. The incision in the gall-bladder was continued down to the cystic duct which was in turn opened throughout its extent. At its termination the opening was continued for a short distance along the anterior surface of the common duct. With a finger in this opening, a stone was located in the hepatic duct and removed without difficulty. No further effort was made to free the adhesions. A tube was inserted for drainage in the usual way and the patient made an uninterrupted recovery. A short time later the same method was tried in a woman of 62 years of age who gave a history of having had her first gall stone attack at the age of 23. Innumerable severe attacks had occurred since.

These repeated attacks had left the abdomen about in the same condition as the first case. Without attempting to separate adhesions, the gall bladder and ducts were split as described above and a stone located in the retro-duodenal portion of the greatly distended common duct. This was easily brought up into the first portion and removed. The convalescence was easy and the result excellent.

In both these cases, as the incision extended toward the common duct, previously unrecognized structures were easily identified. No step was taken blindly but in plain view. No troublesome bleeding was encountered, and two extremely difficult cases, the re-operative one, I believe, otherwise impossible on account of the age and condition of the patient, were rendered comparatively easy.

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DEMOGRAPHY.*

Demos (people); Graphein (to write.)

By W. A. PLECKER, M. D., Richmond, Va.
State Registrar of Vital Statistics.

This is a broad term embracing a study of all phases of human life, particularly:—

1. Genealogy.
2. Eugenics.
3. The Census.
4. Vital Statistics: birth, marriage, divorce, sickness and death.
5. Biometrics: the study of human growth, stature, strength, etc.
6. Pathometrics, or statistical pathology.

While the term and developed science of demography are of recent origin, some phases of it are as old as the human race.

Adam was a hundred and thirty years old when he begat Seth. If we refer to the genealogy of our Lord as recorded in Luke, 3rd Chapter, we will find a perfect ancestral record back to the first man. Long before the days of Christ, Egypt, Persia, Greece, Rome and China, as well as the Hebrews, kept demographical records.

However interesting other phases of demography may be, our present studies will necessarily be restricted to vital statistics.

In England the registration of baptisms (or births), marriages and deaths, reaches back to 1538 when Thomas Cromwell issued an injunction

requiring the clergy to make on each Sunday, in a book kept for that purpose, an entry of baptisms, marriages and burials during the previous week.

The modern registration of births, marriages and deaths in England dates from 1836, while compulsory registration began in 1870. Twenty-five years after the first English settlement in America, at Jamestown, the General Assembly of Virginia in 1632, enacted a law requiring a minister or warden from every parish to be present annually at court on the 1st of June and present a register of burials, christenings and marriages.

Seven years later, the Massachusetts Bay Colony, in 1639, adopted a requirement for the keeping of marriages, births and deaths.

In 1692 Massachusetts by further enactment put the registration of births and deaths upon a more definite basis.

It is a matter of interest to know whether any of the first vital statistics records of Virginia are today in existence. Few county records have probably escaped fire, war and careless handling for nearly four hundred years.

The oldest Virginia records of births and deaths now available for the State, were secured by the Commissioners of the Revenue as they called upon the householders once a year, for the purpose of assessing their property for taxes. Inquiry was made at the same time as to births and deaths that may have occurred in the family.

Copies of these records were made and forwarded to the State Auditor once a year by the county and city clerks. These were in 1918 transferred to the Bureau of Vital Statistics and are now arranged for ready reference covering the period from 1853 to 1896.

The record of marriages from 1853 to the present are also in the care of the Bureau of Vital Statistics, and are now sent in annually by the clerks, during the first two months of each year, for the year preceding.

In 1918, under an act of the legislature, divorces likewise became reportable by the clerks.

The registration of births and deaths is now secured under modifications of the Model Law in most of the other States of the Union. As each State is found by U. S. Bureau of the Census test to be securing the registration of 90% (ninety per cent) or more of the deaths

*Summary of Introductory Lecture on Vital Statistics to the Senior Class of the Medical College of Virginia.

and births, it is admitted to the Registration Area for one or both. The U. S. Census annual tables and reports are made from copies of the original certificates secured by the registration states.

VALUE OF VITAL STATISTICS.

Vital statistics constitute the foundation upon which public health work is based and are valuable in proportion to their accuracy and completeness.

MORBIDITY REPORTS.

Complete and accurate morbidity statistics of preventable diseases is one of the three pillars upon which public health work stands. While for permanent and final study nothing can take the place of birth and death registration, deaths constitute the end result and are the records of the failures which were not prevented by physicians, citizens and health officials working in unison.

It is only by the immediate reporting of preventable, not necessarily communicable, diseases to alert and prepared local and state health officers, that the most efficient and productive health work can be done.

In this connection, it is a matter of great interest to attempt to draw the line between the preventable and non-preventable causes of death. As this line is gradually extended, the time seems to be approaching when only degenerative diseases, the result of age, will be left.

The functions of health departments and governmental responsibility are gradually extending. Perfection, the goal towards which our dreams are directed, seems to be growing less distant.

BIRTH REPORTS.

Of the physical events in the life history of the individual, his birth is first and most important. The recording of this event, like that of his death, depends entirely upon the faithfulness and honesty of others. The infant at his birth is powerless to foresee the many demands which modern society will make for his birth certificate. He does not know that the correct record of his birth is one of the important links in the chain which binds together all forms of child welfare work.

The intelligent and painstaking physician, however, possesses the knowledge and extends the protection. No other is worthy of the important and responsible duty of accoucheur,

nor is he deserving of the endearing title "Our Doctor."

Birth registration in Virginia and elsewhere is now required for proving age for school enrollment, child labor, securing war benefits, and for many legal purposes. The fate of many a Virginian has hung, and will hang, upon his ability to prove from the vital statistics records that the girl he has betrayed is beyond the age of consent. The most frantic appeals have come to our office for birth certificates in these cases. How will it be in the future, now that birth registration is required?

A Virginia soldier is now unable to return to America with his German bride because he can produce no birth certificate.

Even now there is great demand for birth certificates to use in securing passports to foreign countries. In the future the demand will be more imperative.

Questions of heirship, legitimacy, etc., may be quickly and effectually settled only by properly certified copies of birth certificates from the Bureau of Vital Statistics.

These are some of the reasons why birth registration is of value to the individual.

The real value to the State of complete birth and infant death registration is to study, with a view to prevention, the high death rate of infants during the first year of life. In the United States, one death out of every six is an infant.

In some of the mountain counties of Virginia, one-third of the deaths are of infants, and even then all the deaths are not registered.

Time does not permit me now to dwell upon the details of the nearly six thousand infant deaths in Virginia each year, 75% of which are preventable, under favorable conditions, even now while with proper eugenic control and the eradication of syphilis, 90% of infant deaths after several generations may be considered preventable.

DEATH REGISTRATION.

When the Model Law which went into effect in Virginia on June 14, 1912, was under advisement, the U. S. Bureau of the Census considered death registration alone as fully worth the cost of maintaining the bureau. This estimate was entirely justified by facts, as actual health conditions began to be revealed with the study of our death certificates.

The Health Commissioner, during the first

year (1913) of death registration, learned that he had 709 deaths from typhoid fever each year to prevent, and took up this definite task to accomplish. Could he have known without vital statistics that by 1919 he would have more than cut this death rate in half?

How would the tuberculosis fighters have known without death registration, that in 1915 Virginia had 4003 deaths from that cause, and that in four years it would be reduced by 558?

Who would have known, had not the Bureau of Vital Statistics dragged the information from reluctant physicians, that 497 women died in childbirth during 1917, many, however, being listed as deaths from peritonitis, septicaemia, uraemia, eclampsia, acute nephritis, hemorrhage, etc., all end results, with no mention of the dread term "puerperal"?

LEGAL USES OF DEATH REGISTRATION.

Transcripts are more frequently requested of certificates of death for the collection of insurance claims than for any other purpose. They are at present in much demand by the War Pension and War Risk Insurance Bureaus, as evidence of death.

Death certificates are frequently needed in the settling of estates, and to prove the right of the widow to remarry.

Eventually, vital statistics records will be invaluable for establishing gynecological facts.

When attention is simply called to these various needs for birth and death registration, it would seem that reference to the necessity of having them legible and accurate is entirely superfluous.

A few minutes' examination of the bound volumes of birth and death certificates will reveal the gross carelessness and apparent indifference of some physicians and other persons, in the discharge of this important duty to family and State.

It is pleasing to note the painstaking care which the leading and most successful obstetricians of the State use in making out their birth certificates. This care is but a reflection of their habit of performing all of their professional duties in the best manner of which they are capable. These men, though they may attend one or two hundred births a year, never raise the plea of being too busy to make prompt and correct reports of them.

On the other hand, I can scarcely recall a man of shady moral, professional or business reputation, who has not laid himself open to

criticism from our office, for wilful and repeated disregard of the law and the rights of his patrons.

Some men of standing and character have for a while not realized the importance of placing this simple duty upon the same footing as the clean skillful handling of their patient.

One or two gentle reminders are all that men of this type require.

MODEL LAW.

The Model Law is the basis upon which the States successful in securing good registration of births and deaths are working.

The essentials of this law are local registrars in every community of the State, appointed by and supervised by the State Registrar from the central office, or Bureau of Vital Statistics, usually at the State capitol or chief city. The local registrar is in charge of a definite district or township or portion thereof, and is alone responsible for registration within his territory. In Virginia the effort is made to place registrars eight or ten miles apart so that none will be required to travel much over five miles to record a death and secure a burial permit. In many localities, however, they are nearer, and in others further apart.

The feature of death registration is the burial permit which is required before a funeral can be conducted legally. This is secured by filing a complete certificate of death with the local registrar before removal or burial of the body. The undertaker or person acting as undertaker (head of the family) is responsible for making the return. The undertaker shall secure from the family answers to all of the questions on the form, except the cause of death. He is then to present the certificate to the physician last in attendance, who is to write and sign a statement as to the primary cause of death. This certificate is then to be delivered to the local registrar, or his deputy, who shall issue a burial permit therefor.

The registrar shall assure himself that the certificate is complete and accurate, write on it the date of filing and sign.

Births are to be reported within ten days by the physician or midwife in attendance, or by the head of the family if there was no attendant. These certificates are to be copied into books provided by the State Registrar for

the purpose, and mailed to the central office on the tenth of the following month.

The entire work of securing and compiling vital statistics depends upon the correctness of these original reports. Though this seems a simple matter, experience shows that many capable physicians fail to familiarize themselves with the essentials of a correct certificate and force upon the State office the great burden of writing thousands of letters of inquiry for essential facts omitted or improperly stated.

This subject will be discussed in detail in a subsequent lecture when you will be shown the requirements of a correct certificate and the most frequently made mistakes to be avoided.

Perhaps half of the physicians of the State make out their certificates in a legible, painstaking manner, that marks them as physicians who may be depended upon to render a correct diagnosis and to perform all of their duties in an intelligent and professional manner.

I would estimate that half of the remainder will make a mistake but once when attention is called to it. The remaining twenty-five per cent are careless to varying degrees, and perhaps ten per cent of the physicians cause our office ninety per cent of our trouble.

The labor and cost, consumed in the effort to overcome the neglect of this small part of the medical profession, is the one problem we are facing in our effort to secure the accurate and complete registration of all births and deaths.

I beg each of you to familiarize yourself with the requirements of correct certificate writing and, when you enter into practice, do not thrust yourself into the delinquent class, and force every clerk in the office of the Bureau of Vital Statistics to rate you with the undependable part of the profession.

ACUTE PYELITIS.*

By *A. I. DODSON, M. D., Richmond, Va.

Urologist and Associate Surgeon to St. Elizabeth's Hospital.

During the past eight months there have been admitted to St. Elizabeth's Hospital seven patients suffering with acute pyelitis. Two patients were admitted with a diagnosis of acute appendicitis, one of whom was operated upon. In one case a diagnosis of pelvic inflammation had been made and one patient had

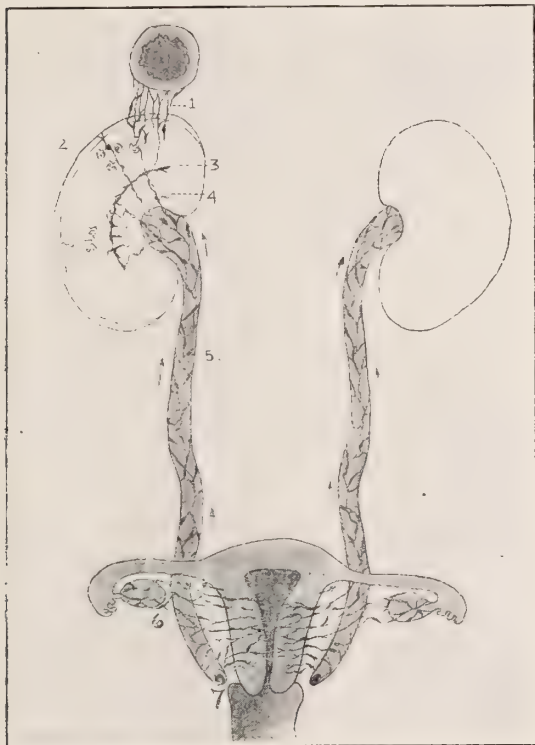
been treated ten days for malaria. One had pyelitis complicating pregnancy, and one pyelitis with multiple stones in the pelvis of the kidney. In addition to these, another patient developed acute pyelitis following a pelvic operation. The frequency of this condition and the number of confusions with other diseases in so few cases prompt me to present our observations.

Pilcher, in his very excellent text-book, "Modern Cystoscopy," describes pyelitis as an acute catarrhal inflammation of the lining membrane of the pelvis of the kidney, usually associated with dilatation of the pelvis and congestion of the kidney parenchyma. It is often unilateral and most frequently on the right side. Most prominent among predisposing causes is some incomplete obstruction such as may arise from an impacted calculus, twisted ureter, stricture of the ureter or pregnant uterus. Infection may be carried to the pelvis of the kidney either through the lymph channels or the blood stream. When we notice that the lymph supply of the rectum, sigmoid, bladder, ureter and kidneys drains into a common lymphatic system and that these lymph channels pass in close proximity to the kidneys on their way to the receptaculum chyli, and also that the lymph current is under very low pressure, it seems much more probable that organisms reach the kidneys in this way than either along the urinary current or by extension along the ureteral wall.

Eisendrath and Schultz, in the study of the path of involvement in ascending infection of the urinary tract, (*JOURNAL OF MEDICAL RESEARCH*, January, 1917) cited experiments by Gerota, Bauereisen, Kumita and others, showing the presence of an anastomotic network of the lymphatics in the wall of the bladder and the ureter communicating above with a similar lymphatic network in the renal pelvis. This system also communicates with the lymphatics of the pelvic-structures both in the male and female. They showed by animal experimentation that both motile and non-motile organisms were easily transported from the bladder to the kidney by the lymphatic stream in the ureteral walls and that almost complete obstruction to the free passage of urine is necessary for the ascent of infection by way of the lumen of the urinary tract. They also showed

*Read at quarterly meeting of Southside Va. Medical Association in Petersburg, March 8, 1921.

that pyelitis and pyonephritis, not secondary to pyelitis, may also be the result of lymphatic transportation of infection from the pelvic organs in the male or female and from the lower intestinal tract.



Relation of the lymphatics of the ureter to those of the internal genitalia of the female. 1. Lymphatics from the cortex of the kidney. 2, 3, and 4. Lymphatics of the parenchyma of the kidney (Kumita). 6. Communication of the periureteral lymphatics. 5. with those of the uterus, tubes and ovaries. (Copied from Eisendrath and Schultz. *Journal of Medical Research*, January, 1917).

The frequency with which infection enters the kidney pelvis by the blood stream is evidenced by the occurrence of pyelitis during acute infectious diseases and in suppuration in other parts of the body. One of the cases in our series seems clearly to have been caused by a suppurative process in the knee joint.

Since the kidney's function is the elimination of waste and undesirable products from the body, doubtless numerous organisms are presented by the blood for extrusion daily and it is only natural that at times, being impaired by one of the above mentioned or some other predisposing cause, the kidney pelvis may become fertile soil for their implantation and growth.

The colon bacillus is the most frequent offender but staphylococci, streptococci and the

bacillus subtilis are also mentioned as causative organisms. Colon bacilli were cultured from three of our cases. In three cases no culture was made, and in one the culture was negative.

Acute pyelitis is usually characterized by the sudden onset of severe pain in the lumbar and lower abdominal regions. There is tenderness and often hyperaesthesia and rigidity of the muscles of these parts. The patient often has a chill and is nauseated and vomits. Three of our patients had chills and four complained of nausea and vomiting. Frequent painful urination is mentioned as a valuable sign. It was not present in any of our cases. I believe it will only be found when there is an accompanying cystitis or ureteritis.

The urine of the majority of the cases here reported contained considerable pus and a moderate amount of albumin. The urine of two patients, however, had very few leucocytes when admitted and a bare trace of albumin. In three there were a few red blood cells in the urine, while the majority showed acetone and diacetic acid.

On cystoscopic examination the trigone is found markedly congested and edematous, more so on the infected side. The corresponding ureteral orifice is congested and pointing and often cloudy urine can be seen coming from it. If the condition is unilateral the other orifice will appear normal. Ureteral catheterization will definitely establish the diagnosis.

The leucocyte count will depend greatly upon the freedom of drainage. In four of our cases there was a moderate leucocytosis, ranging from 11 to 16 thousand. In three, the leucocyte count was normal. All except one showed a relative increase in polymorphonuclear leucocytes.

The following case histories will illustrate some of the difficulties met in diagnosis:—

Mrs. T. D. W., age 39, entered St. Elizabeth's Hospital, August 31, 1920, complaining of nausea and vomiting, and pain in the lower abdomen. Her family history was negative.

PAST HISTORY.—For several years she had had occasional "cold shakes" followed by a little fever. Four years ago she was operated upon for "female trouble" and has had a scant leucorrhoea for the past year.

PRESENT ILLNESS.—On August the 23rd, she was taken with severe pain throughout the ab-

domen, accompanied by nausea. On the following day the pain was not so severe, and it seemed to radiate from the small of the back on both sides downward into the pelvis. Physical examination was negative with the exception of general abdominal tenderness and slight distention. Her leucocytes were 6800, polys 86. Urinalysis showed a trace of albumin and many leucocytes. During her first three days in the hospital she had one chill each 24 hours, temperature going up to 104. Repeated examinations for malarial parasites were negative. During this time she was unable to retain even water by mouth and was given fluids by hypodermoclysis. During the following week her temperature ranged from 99 to 101 and gradually returned to normal. On September 11, cystoscopic examination revealed a moderately congested bladder mucosa and no difference in the appearance of the two ureteral orifices. Urine from the left kidney contained a large amount of pus. Urine from the right kidney was clear. Colon bacilli were cultured from both specimens.

The presence of vaginal discharge and pain coming on suddenly throughout the abdomen accompanied by general tenderness and distention would certainly lead one to think of pelvic infection. Her history of malaria and the presence of chills and fever, with a practically normal blood count, is usually indicative of malaria.

Mrs. C. A. S., age 53, admitted to St. Elizabeth's Hospital, December 8, 1920, complaining of chills and fever. Family history and past history uneventful.

PRESENT ILLNESS.—August, 1920, she had an attack of chills and fever lasting about a week; at the same time she noticed some pain and swelling in the right knee. The condition in the knee progressed until October 22, 1920, when she came to the hospital and was operated upon, the diagnosis being septic arthritis. She was discharged November 6th, improved. At this time she had 6000 leucocytes and 70 per cent. polys. Urine contained a trace of albumin and many white blood cells. She continued to improve until December 1st, when she again began to have chills and fever which persisted until December 8th, when she was again admitted to the hospital. On admission she looked quite sick, temperature 98, pulse

116; no pain nor tenderness at any place and considerable improvement in the condition of the knee. Blood count 9000, polys 55. Urine contained more albumin than at previous admission and still considerable pus. The following day she had a chill, temperature going to 103. On December 10th, cystoscopic examination revealed a moderate inflammation of the bladder with considerable edema of both ureteral orifices. Urine from both kidneys contained a large amount of pus. Frequent cultures failed to reveal the presence of any organisms. This patient also had a low blood count and no symptoms whatever to lead one to suspect inflammation of the kidneys, with the exception of pus and albumin in the urine.

Mrs. L. R. B. entered St. Elizabeth's Hospital, December 19, 1920, complaining of pain in the right side. Family and past history were negative.

PRESENT ILLNESS.—She gave birth to a healthy child October, 1920. After being up about a week she had chills and a pain in the back. She remained in bed three or four days and the symptoms subsided. On December 18th, she was awakened at night with intense pain in her back and in the lower right quadrant of the abdomen; she was nauseated and vomited. The following day she was admitted to the hospital. She had a temperature of 102, pulse 118, and appeared quite sick. There were intense tenderness and muscular spasms in the right lower quadrant of the abdomen and considerable tenderness in the lower right lumbar region. Leucocytes 15,480, polys 78; urine showed a trace of albumin, a few white blood cells and an occasional red blood cell. The likelihood of pyelitis was thought of in this case but, because of the marked spasm and tenderness over the appendiceal region, it was thought unwise not to operate. When the abdominal cavity was opened, a moderate amount of blood tinged fluid was found. The appendix was found to be congested throughout its peritoneal surface. It was removed. The lower pole of the right kidney could be easily palpated and was tense and congested. She continued to have intense pain in the right lumbar region and lower abdomen with temperature of 101 and 102 until December 22nd, when cystoscopic examination showed a moderately congested bladder, con-

siderable edema about the trigone, and the right ureteral orifice markedly swollen. Catheterization of the right ureter showed a large amount of pus from that side. Motile bacilli were seen but no culture was made.

Pyelitis and infection of a post-cecal appendix or an appendix lying low in the pelvis and adherent over the ureter are always confusing. I recall a case in which the patient had many bladder symptoms, frequent and painful urination, and a considerable number of pus and blood cells in the urine. Operation revealed an appendiceal abscess. The appendix sloughed off, and was found floating free in the abscess cavity, one wall of which was formed by the bladder and another by the pelvic peritoneum under which the ureter passed.

The most important factors in making a differentiation between acute pyelitis and infections of the abdominal viscera are a carefully taken history, an examination of catheterized urine and, if confusion still exists, cystoscopic examination. In appendiceal infection, a history will usually reveal the onset of a general abdominal pain, centering first around the navel and becoming more acute in the right iliac region. The temperature, too, in appendicitis is much more constant as a rule than in pyelitis, and chills are much less frequent.

Acute infection of the gall bladder frequently causes chills and an intermittent temperature, resembling that in pyelitis; but, in this condition, the spasm of muscles and tenderness are practically always confined to the upper right abdominal region. Acute pyelitis frequently accompanies pregnancy and the puerperium and, if only a chemical test is made of the urine, toxemia of pregnancy may be suspected. I also have no doubt that cases are frequently treated for puerperal sepsis when the real pathology is in the pelvis of the kidney. In any acute infection there is apt to be some pus and blood in the urine and, if this infection happens to be located in an abdominal organ, confusion will frequently exist.

The confusion between malarial infection and pyelitis is a plausible one and no case should be submitted to quinin therapy until a thorough investigation of the urine has been made. The differentiation of acute pyelitis from septic conditions of the kidney paren-

chyma in the early stages is very difficult. No suspected surgical kidney should be operated upon until drainage of the pelvis by a ureteral catheter has been tried.

Of greatest importance in the treatment of pyelitis is elimination both by the intestinal and the urinary route. The bowels should be kept open and a large amount of fluid given. If sufficient water is taken no drugs will be necessary to cause a bland urine. Urotropin has for a long time been the drug of choice but, in the light of recent experimentation, I believe that the results obtained have been because of the large intake of fluids.

Shohl and Deming (*JOURNAL OF UROLOGY*, October, 1920) have published experiments showing that about 60 to 75 per cent. of hexamethylenediamin given is excreted in the urine as such and that conversion into formaldehyd depends upon the acidity of the urine and the length of time excreted. Their experiments indicate that the urine must be retained in the bladder at least two hours in order for sufficient formaldehyd concentration to take place to be effective as an antiseptic. Then it would seem that it is entirely valueless at the kidney pelvis or in cases suffering with frequency of urination. If, however, the patient is able to retain the urine for a period of two hours, urotropin may be of value as a prophylactic in preventing vesical infection or in the treatment of such infection when it precedes the inflammation of the kidney pelvis.

Aynesworth (*SURGERY, GYNECOLOGY AND OBSTETRICS*, July, 1915) advocated the washing out of the renal pelvis with sterile water and injecting a solution of some silver salt. This procedure was carried out in four of our cases during the acute stage with very excellent results. Three of the patients were having intense pain with temperature over 102 at the time of treatment. They were in every instance immediately relieved of pain and the temperature did not at any time after the treatment go above normal. Another patient had been having daily chills for about 10 days. Following a pelvic irrigation no more occurred for five days, and no more occurred at all after the second treatment. The technique employed was the passage of a soft ureteral catheter up to the renal pelvis and irrigation with boric acid solution until the fluid returned clear, then about five c.c. of two per cent silver nitrate

were run into the renal pelvis and permitted to drain out through the catheter. In three of these patients the catheter was withdrawn at the end of the treatment and the procedure was repeated in about a week. In one case there was so much swelling and edema and the inflammation was so pronounced that the catheter was left in place and the renal pelvis irrigated every four hours for 48 hours. A comparison of the result obtained in these cases and in those in which the cystoscopy was not done in the acute stage, shows a very marked difference, the cases that were cystoscoped convalescing much more rapidly. I believe that every case in which the intense pain and temperature persists for more than 48 hours should be drained in this way.

Two of our patients were treated by being given large amounts of alkali, keeping the urine alkaline, together with forced fluid. The results were very satisfactory. Colon vaccine was used in three cases but I was unable to see any benefit from its use. Mercurochrome was used in two cases but no special benefit could be attributed to it.

OPTIC NERVE IN ITS RELATION TO THE POSTERIOR NASAL SINUSES.*

By JAMES BORDLEY, M. D., Baltimore, Md.

In calling your attention to the optic nerve in its anatomic and pathologic relations to the para-nasal sinuses, I am not unmindful of the existence of the voluminous literature upon this subject. It occurred to me that a recitation of personal experiences might lend interest even to this oft told tale.

It is, indeed, an established fact that disease of the accessory nasal cavities is protective of alterations in the appearance and function of the optic nerve. If we call to mind the exposed position of the nose, exposed not only to physical violence but to atmospheric changes and germs of disease, and its intimate relationship with the optic nerve, we will find small cause for wonder. The nose is from birth subjected to severe infections and, due to its peculiar anatomical structure, it frequently undergoes histological changes of far-reaching importance. Most of the changes in microscopic structure within the sinuses arise from the intimate relationship of the mucous membrane

and periosteum which are to all intents and purposes one and the same. A severe or long continued inflammation of this muco-periosteal covering is prone to seriously affect the underlying bone.

I am not assuming too much when I say that the nasal chambers and accessory cavities of most adults are the seats of definite pathological changes. So long as these changes affect neither health nor the integrity of adjacent organs they attract little attention. Unfortunately, however, the sinuses are in intimate relations with other structures vital to man's happiness and usefulness, such, for instance, as the optic nerve, which for about half its length lies in close proximity to the posterior cells; the vidian, or maxillary nerves, which pass through foramina in the sphenoid bone; the oculomotor, trochlear, abducent and ophthalmic, which usually pass through the sphenoidal foramen, but, as has been pointed out by Schaeffer, not infrequently through the body of the sphenoid bone itself. The sphenoid and posterior ethmoid sinuses are separated from the optic nerve only by the thickness of the wall of the optic canal which usually measures less than half a m.m. This bony partition is pierced by veins which, originating in the sinuses, empty into the central vein of the optic nerve—the vein of Vossius. The muco-periosteal lining of the sinuses is practically continuous with the duro-periosteal lining of the optic canal through vascular anastomoses. Not only is the intracanalicular position of the nerve exposed to the baneful influences of sinusitis but also the intracranial portion and the optic commissure. These latter structures lie on either the superior or posterior wall of the sphenoid sinus and at times are protected only by a lamina of bone of the thinness of paper. The disturbances which have been noted in the optic nerve have been variously ascribed to toxæmia, venous stasis and pressure. It seems probable that these three agencies play a part, sometimes one of them, sometimes all of them. In sinusitis we do not always deal with a suppurative process; indeed the most insidious form, the form which does the greatest damage to neighboring structures, is a hyperplastic inflammation. This chronic disease, with its osteophytic growths, its rarifying osteitis, and its tissue thickening propensity, may close the ostia of sinuses and pre-

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vent draining and ventilation; impinge on branches of sensitive or special nerves and involve their peripheral distribution.

One of the most disturbing factors in sinus disease is the general impression that all sinusitis must be productive of pus. This impression is a stumbling block in the way of adequate study of sinuses. It is commonly supposed that to discover the presence of sinusitis it is only necessary to casually inspect the nose. This is indeed an erroneous opinion for while the presence of disease in the para-nasal sinuses is sometimes extremely easy to determine, at others it presents problems which are only solved by careful, thoughtful and, I can almost say, prayerful study. To pass a final opinion as the result of one negative investigation is only inviting disaster for the patient and mortification for the physician. Indeed, I have come to look upon the diagnosis of sinus disease in many instances as an achievement. In many cases to depend solely upon intranasal inspection is folly—more frequently one would be misled than helped. Indeed, there are but three reliable indications of sinus disease to be elicited by intranasal inspection; pus, polypi and necrotic bone, and they are more frequently visually absent than present.

In doubtful cases, we must call to our aid transillumination—which is helpful only in the anterior cells—and suction—which makes manifest pus when the ostium of the sinus lies below the level of the pus. It is upon the radiograph we must largely depend. While this procedure offers exceptional advantages a single negative finding should not be considered as definite evidence of the non-existence of sinus disease. Its value is dependent not alone upon the clarity of the picture but upon the experience of the one who translates that picture. Only the other day, I saw a child on whom had been performed a radical antrum operation in consequence of the radiographer mistaking an occipital ridge for pus in the antrum. This child had choked disks the result of a cerebellar tumor.

It is essential for the reader to have a clear mental picture of the anatomic variations in size and position of the sinuses. A distinguished radiographer told me that he would never give a final negative opinion on any sinus without first viewing it from at least six different positions. You see then that even in the

hands of a man of superior experience there are real difficulties to be overcome and I use the experience of my radiographic friend to again illustrate the point that a negative finding of any single method of examination is not proof of the absence of sinus disease.

I have gone fully into the discussion of the anatomy, the pathology, and diagnosis of this question, because I believe it will serve to emphasize the importance of thorough, painstaking investigations before concluding that a given disturbance in the function of the optic nerve is or is not based upon disease of the paranasal cells. I have endeavored to make it clear that there is a real anatomic and pathologic basis for the assumption that disease of the sinuses may be made manifest by changes in the ophthalmoscopic and visual field pictures of the optic nerve. As the most peripheral fibers of the optic nerve, as it traverses the optic foramen, are the paripapillary fibers of the retina, it follows that involvement of the duro-periosteal lining of the optic canal in the disease of the underlying sinus will inevitably lead first to damage of these peripheral fibers. If the resulting swelling of the lining of the canal is evanescent and not intense, involvement of the deeper portions of the nerve will probably not take place; if, however, it is severe and long continued, it may lead to symptoms which vary from slight obscuration of vision to total blindness. Pressure from a swollen lining may affect the nerve through mechanical damage by obstructing its circulation, by the production of local toxæmia, and through transmission of toxins by contact. It is to the potency of these various etiologic factors that we must look for an explanation of the alterations in the fields of vision.

The most common of these alterations is an enlargement of the blind spot of Marriott. This enlargement is of spindle form, which gradually overspreads a preceding and advancing color scotoma and is dependent upon inhibition of the function of the most peripheral of the fibers of the optic nerve. In 102 patients with sinus disease we found this symptom but 31 times. I am convinced that in the remaining cases we were dealing with individuals with abnormally thick sinus walls, with abnormal circulatory conditions, or in whom there had taken place some unexplainable compensatory change in the optic canal.

While of less frequent occurrence than enlargement of the blind spot, other para-central and central scotomata are more interesting and, from a visual standpoint, more important. The intensity of central change varies from a mere disturbance in red and green perception to a positive scotoma for colors and white extending beyond the normal blind spot. While some authors have attempted to differentiate this scotoma from similar changes due to other causes, I have found but two significant facts: In sinus disease, the alteration is usually unilateral and more rapid and definite in its formation. There are, however, many exceptions to this rule.

We are still in doubt as to the direct causative factor in central blindness. Birch-Hirschfeld looks upon it as a result of toxæmia resulting from venous stasis within the optic canal; Hajek described it as a sign of perineuritis from pressure; and Gradle attributes it to disease extension through soft tissues and vessels from the infected sinuses. In the eleven cases that I have observed, it appeared only as a symptom of chronic sinusitis; in but four of these patients was it associated with enlargement of the blind spot. This experience leads me to suspect that central visual alterations probably result from toxæmic disturbances in the central bundle of the nerve, sometimes associated with pressure in the canal, but usually not.

Disturbance in color perception and peripheral contractions which are frequently seen are so influenced by pain, fatigue and alterations in illumination as to make them of questionable diagnostic value. Where both optic nerves are disturbed, either partially or in their entirety, the lesion usually lies without the cranial cavity and the part most frequently affected is the optic commission.

The association of sinus disease with ophthalmoscopic lesions is so clearly stated by de Schweinitz that I quote him: "It is well known that sinusitis may be associated with ophthalmoscopic lesions, such as optic neuritis, retrobulbar neuritis and thrombosis of the retinal vessels. It may manifest itself as an ordinary oedema of the nerve head or as an inflammatory optic neuritis. In a certain number the manifestation is that of a retrobulbar neuritis with its well known symptom of obscuration of vision progressing to complete or

almost complete blindness, with at first negative ophthalmoscopic findings."

My experience leads me to believe that the most usual picture found is that of dimness or haziness of the margins of the disk. While many theories have been advanced to explain this phenomenon, there is but one that appeals to me—venous stasis. Through the orbital veins there is a direct communication between the veins of the sinuses and the cilioretinal system. These veins are valveless and congestion or stasis in one would almost certainly affect the other. Haziness of the disk margins is by no means pathognomonic of sinus disease. Indeed, any cause which has a depressing effect on the orbital circulation may result in obscuration of the margins of the disk. Therefore, considered by itself, while it is a straw that points the wind, it is not definite diagnostic evidence.

The ophthalmoscopic change may pass beyond the simple congestion just mentioned and manifest itself as a pure neuritis, a retro-bulbar neuritis or a choked disk. In my cases, inflammatory neuritis was more frequently met with in patients in early adult life and in association with moderately acute nasal symptoms; retro-bulbar neuritis with its typical ophthalmoscopic picture occurred in the more chronic types of sinusitis; and I have come to regard choked disk as an indication of secondary meningeal disturbance. I have seen but four patients with choked disk, and, in three postmortems obtained, evidence of the extension of the disease to the meninges was present. I have no doubt a sort of benign choked disk can result from an increase in intracranial pressure brought about by non-purulent reactions in the cavernous sinus or the meninges just as transitory choking of the disk develops as the result of inflammatory disturbances in the mastoid and middle ear.

There are certain ocular manifestations without the optic nerve which are helpful in determining the existence of sinus disease. I refer particularly to orbital neuralgia; fugitive oedema of the eyelids; congestion of the conjunctiva with the familiar "wet eye"; recurring attacks of episcleritis; and paralysis of one or more of the ocular muscles. Like all other ocular symptoms of sinus disease, none of these conditions is constant and none is peculiar to sinus disease.

This fact calls to my mind the thought that in dealing with disturbances in the optic nerve we should be most conservative. By conservatism, I do not mean fear to follow a bold course when action is demanded, but rather action based upon careful, painstaking investigations. If we are to judge by published statements, in-offensive sinuses are frequently obliterated before a careful diagnostic routine has eliminated other possible causes of disturbance in vision. Unfortunately, we know no ocular manifestation peculiar to sinusitis, nor do the coincident presence of the two necessarily justify the assumption that the one is dependent upon the other. Optic nerve disease is not only a serious menace to sight, but it is only too frequently an early manifestation of serious constitutional disease. It behooves us, therefore, before attempting intranasal operative treatment, to make sure that we have neglected no essential detail in diagnosis. Sinus operations are not free from danger either to sight or life. It is, therefore, incumbent upon us, before undertaking such procedures, to fortify ourselves in advance, by submitting our evidence and the patient for the impartial examination of a competent internist or neurologist.

SURGICAL PROCEDURES IN FRACTURES OF THE ELBOW.*

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A brief review of the anatomy of the elbow is advisable. This joint is formed by three bones; the humerus, the ulna, and the radius.

For our consideration the end of the humerus presents two articular surfaces; the capitellum and trochlea; the capitellum, a rounded eminence for articulation with the radius; the trochlea, a deep smooth groove for the ulnar articulation. In addition, the olecranon fossa posteriorly, and the lateral and medial-epicondyles must be borne in mind. The medial epicondyle is the larger and more prominent.

There is a separate center of ossification for each epicondyle, the trochlea and the capitellum. These centers unite to the body of the bone between the sixteenth and eighteenth years, the medial epicondyle being the last to join.

The upper extremity of the ulna has the large olecranon process, the coronoid process, the semilunar notch for articulation with the trochlea of the humerus and the radial notch for articulation with the head of the radius. A separate center of ossification in the olecranon process joins the rest of the ulna about the sixteenth year.

The upper extremity of the radius presents a head for articulation with the radius notch of the ulna and capitellum of the humerus; a neck, and the radial tuberosity. A separate center of ossification in the head fuses with the body about the seventeenth year. An additional center is occasionally found in the radial tuberosity.

The articulation between the ulna and humerus is a hinge joint; the radius and humerus form a ball and socket joint; and the ulna and radius form a pivot joint. The joint capsule covers all three articulations. Thickened portions in the capsule form the so-called joint ligaments.

The anterior and posterior ligaments are thin and broad, being very little more than membranous. The radial collateral ligament is a short fibrous band extending from the lateral epicondyle to the annular ligament of the radius. The ulnar collateral ligament is a thick triangular band attached by its apex to the medial epicondyle and inserted below into the coronoid process and olecranon. The annular ligament forms a strong fibrous ring holding the head of the radius to the ulna. A prolongation down to the neck of the radius is called the quadratus ligament.

The synovial membrane forms a sac extending into all three joints. A large bursa over the olecranon, a bursa under the biceps tendons, and one under the triceps tendons at their insertions are sometimes of importance surgically.

The muscles related to the joint are brachialis and biceps in front, triceps behind, supinator and extensors on the outside, pronator and flexors on the inside.

A very complete network of anastomosing branches of bloodvessels is formed about the joint.

The nerve supply is from the ulnar, musculocutaneous and median.

Most fractures in the region of the elbow are easily diagnosed; many are very difficult

*Read before the Surgical Section of the Norfolk County Medical Society.

to diagnose, and some are extremely deceptive. As rational treatment depends on accuracy of diagnosis, the doubtful cases should be carefully examined while the patient is anaesthetized. Three bony points should be recognized and marked. They are the olecranon, the internal and the external epicondyles. With the forearm extended, they form a straight line. When the forearm is flexed they form a triangle. These three points can be identified even in the presence of considerable swelling. The head of the radius can generally be located. The carrying angle of the two arms should be compared. Crepitus, false motion, limitation of motion, localized or general, swelling and ecchymosis, with a careful consideration of the history of the injury and age of the patient, will generally point to the nature of the fracture. X-ray plates should be taken of all cases.

The varieties to be borne in mind which involve the humerus are: transverse fracture just above the joint, one or both condyles through the olecranon fossa, the T- or Y-fracture, one or the other epicondyle, fracture of trochlea or capitellum, and epiphyseal separations.

The varieties involving the ulna and radius are: Fracture of olecranon, coronoid process, head and neck of radius.

Any of these fractures may be compound, comminuted, complicated with dislocations, damage to nerves, bloodvessels, and other soft parts, and followed by infection.

The transverse fracture just above the joint is generally the result of a blow on the elbow. The lower fragment is usually displaced backward and upward by the triceps, biceps and brachialis. The normal bony prominences at the elbow joint are in correct relation. The carrying angle may be lost. The joint of the elbow is very prominent. Lateral movement and crepitus can be found. Lateral and anteroposterior x-ray plates are sometimes necessary and always useful.

The treatment of this transverse fracture is early reduction under ether. To maintain this reduction, fixation in acute flexion is generally the most satisfactory position. It opposes the posterior displacement of the lower fragment. In some cases with much swelling or anterior displacement, a right angled anterior splint will be preferable. After reduction and fix-

tion, an x-ray should be taken to insure a good result. Some form of traction applied to forearm is often necessary.

Fracture of both condyles takes place through the olecranon fossa. This may not involve the joint cavity. If the fracture is continued down between the condyles to form the so-called T- and Y-fracture, the joint is always involved. Displacements of the relations of the bony prominences then take place. Crepitus, swelling and tenderness will be more marked over the condyle injured if only one is involved. Transverse measurements are increased and the carrying angle increased or decreased. Lateral motion of the elbow is often present.

Acute flexion will hold most of these fractures in reduction. Some, however, do better with a right angled anterior splint and some few cases will yield the best results dressed in extension. In some cases, open treatment must be resorted to, and fragments replaced, pegged or fastened with absorbable material.

Epiphyseal separations composed of the trochlea, or capitellum, or both, or the medial epicondyle, are often difficult to diagnose without the x-ray. Fortunately, there is usually very little or no displacement. When there is, open operation may be necessary.

Fracture of the olecranon process is frequently overlooked. It is easily diagnosed because of the subcutaneous position of the bone. Reduction should be maintained with the forearm extended. On account of the danger of fibrous union, operative treatment is often advisable.

Fractures of the coronoid process of the ulna and the head and neck of the radius are more difficult to diagnose, the x-ray being very valuable in doubtful cases. Flexion of the forearm relieves the pull of the biceps and brachialis muscles. Acute flexion is the position indicated to maintain reduction of these fractures.

Just a word as to the technic of maintaining reduction by the acutely flexed position. With the x-ray plates before one and the patient anaesthetized, the patient's arm is grasped at the seat of fracture with one hand, the forearm is grasped close to the elbow with the other hand, an assistant giving needed traction to the forearm. When fragments seem to be normally approximated by manipulation, the forearm is acutely flexed on the arm and retained

by a wide strip of adhesive stretching across from just above the wrist to just below the axilla. A wide binder is applied to hold the arm to the chest wall. A smooth pad should be previously placed in the bend of the elbow and the arm, forearm and hand protected from the chest wall by suitably placed pads. The pulse at the wrist and the amount of swelling determine the acuteness of the flexion.

An x-ray should then be taken to be sure that reduction is maintained. The flexion can be increased as the swelling subsides. In ten days' time, dressings are removed, the skin cleansed and powdered, and the dressings replaced. One of the chief dangers of elbow injuries is the loss of flexion. Dressing the arm in extreme flexion avoids this.

The after-treatment of most fractures involving the elbow consists in early institution of passive motion and massage, and the careful maintenance of reduction for four to six weeks; then active and passive motion to recover all functions of the joint. Some cases must be reset several times, errors on the part of the surgeon, but most often on the part of the patient, causing mal-positions to recur or persist.

Operations with suture or pegging of fragments, or bone grafting or clearing of the joint cavity of displaced fragments or soft parts, or resection of the joint, will be necessary at times.

Frequent x-ray plates are desirable and almost a necessity. Before and after reduction and during convalescence, the surgeon should keep in touch with the bony parts by means of skiagrams.

Dislocations at the elbow joint may be of the ulna or radius alone or both together. The bones may be dislocated forward or backward, laterally or medially. Both bones backward is the most frequent. Often fracture complicates the dislocation.

Diagnosis rests on displacement of bony landmarks, lack of crepitus, and x-ray plates.

Treatment, of course, is early reduction. Anaesthesia is often necessary and open operation occasionally necessary.

I have a case to report in connection with this subject. The injury was sustained in a wrestling match, a fall on the left elbow producing a lateral dislocation of both the ulna and radius with fracture of the medial epicondyle. The fragment of epicondyle was

dragged into the cavity by the strong ulnar collateral ligament, became lodged in the saddle shaped trochlea and reduction was impossible, even under ether. A roughened internal condyle was detected on palpation even in the presence of considerable swelling. The x-ray plates cleared up the nature of the obstruction and also the place from which it had come.

It was the type of case that in private practice, without x-ray plates, could so easily run along for months into a suit for malpractice.

One attempt under ether was made to dislodge the fragment of epicondyle from the joint surface but was entirely unsuccessful. Operation was then decided on and performed by Dr. Munger who does most of our bone surgery. The joint was easily exposed by a curved incision anterior to the internal condyle. The fragment was found and was with difficulty dislodged from the trochlear notch. The strong ulnar collateral ligament was still attached. The reduction of the dislocation was then very simple. The epicondylar fragment was the collateral ligament at the base of the epicondyle and then through a hole drilled in the internal condyle. The skin was then drawn across and sutured, the suture line being anterior to the epicondylar prominence. The forearm was then put in extension to get an even pull on the fragment. The ulnar nerve, which lies just posterior to the medial epicondyle, was injured at the time of the fall. Those same injuries were present after the operation, but were not attributed to the operation.

SOME POINTS WELL TO CONSIDER IN THE PRELIMINARY AND POST-OPERATIVE TREATMENT OF PROSTATE CASES.*

By ARTHUR S. BRINKLEY, M. D., Richmond, Va.

During the past ten years, the mortality rate for the removal of the prostate gland has been markedly decreased and this is due largely to investigation of the patient's condition with subsequent proper preliminary preparation, selection of cases, and post-operative treatment, rather than to the improvement in operative technique. Do not understand me to discount the operative technique, for I do think it is all important, but my experience has been that the large majority of fatalities in these

*Read at a meeting of the Richmond Surgical Society, October 5, 1920.

old men have been due to neglect in observing the foregoing important factors.

I well remember how these patients were treated eight or nine years ago; usually they came in the hospital one day and were operated on the next, and about 40 to 50% of them died within seventy-two hours. Since that time, it has been very gratifying to observe the improvement in the methods of handling these cases and the resultant decrease in mortality rate.

The age of the patient, general physical condition, and duration of trouble should be the first things to take into consideration. Of course, an early case in a patient, say fifty-five to sixty, other things being equal, would be a better risk than one ten years older with a history of trouble for some time; also does this hold good in regard to general physical condition. A man who has been in robust health would naturally be considered better prepared for the operation than one who has not. The duration of the disease gives one important bearing on what to expect of the kidney function for instance. With a history of trouble for only a few months, little if any residual urine should be found and, consequently, a marked impairment to kidney function, due to back pressure from a large quantity of residual urine, would not be expected.

All cases of residual urine, resulting from hypertrophy of the prostate, should be properly classified. In early cases we expect from a very little to two ounces; in moderately advanced cases two to four ounces; in advanced cases four to six ounces; and late cases over six. On this classification, together with the amount of pus found in the urine, treatment for preliminary drainage should be based. In early cases, only occasional catheterization is necessary; in moderately advanced cases, a retention catheter; and in advanced and late cases, supra-pubic cystostomy should be done. We used to irrigate these cases several times a day but do not do it very much any more, only in cases of much pus, and then with mild antiseptic like boric acid solution, 1 to 2%. If a large amount of pus is present, say 4 plus (over 100 cells to field), we should suspect diverticulum of bladder complicating the trouble. Formerly, vaccines were used a great deal in cases showing much pus in the urine, but we believe the majority of surgeons have

about abandoned their use, since results did not justify the amount of discomfort it gave the patient.

Kidney function is the most important factor to consider in preparing a patient for operation; under this head we will consider specific gravity, functional kidney test (phenolsulphonaphthalein), and blood urea nitrogen. Low specific gravity has been an indication for postponing operation for several years and I still believe it should be given due consideration: I do not think a patient should be operated if the specific gravity is under 1012. For the past few years, the phenolsulphonaphthalein test has been relied on almost exclusively to show the renal function, but this test alone has been discredited by several recently and I have found it inaccurate myself in a few cases. It is claimed, when there is much irritation to the renal epithelium, this test will be quite high, while the actual damage to the kidney may be marked, so it seems advisable from the facts in hand not to rely on this one test exclusively but rather to check it up with specific gravity and blood urea nitrogen.

I believe the last named test is the most accurate of the newer methods yet contributed for the study of renal function. There is a very good editorial, in the *Journal of A. M. A.*, Sept. 18, 1920, concerning MacNider's recent investigations on renal function, the last paragraph of which I quote: "It is worthy of note by those who are accustomed to rely on old-time urinary diagnostic tests that, according to MacNider's accurate estimates, the amount of protein in the urine is no index of the severity of the pathologic condition of the kidney or the degree of functional disturbance. He states that the quantitative output of protein may show a progressive decrease, easily mistaken for recovery, while at the same time the capacity for elimination of phenolsulphonaphthalein is rapidly decreasing, and both urea and creatinin are showing a retention in the blood."

According to some notes I took from a lecture given by Braasch at the Mayo Clinic, recently, an early case showing a functional test of 40 or over with little or no residual urine and blood urea nitrogen 40, is in shape for operation, but, personally, I would rather wait for the blood urea nitrogen to come down to 30 or under before operation, even in healthy

early cases. In moderately advanced, advanced, and late cases, one should never operate unless the kidney function is 35 or over and the blood urea nitrogen is 30 or under, and specific gravity at least 1012.

In cases showing much pus in the urine and in which we suspect diverticulum or stone, history of cord lesion or hematuria, a cystoscopic examination is advised; in other cases I do not think it should be used, for the traumatism inflicted may give the patient a severe urethral chill or start up a serious infection and nothing of interest is accomplished by the procedure which could not have been obtained by other examinations fraught with less danger.

In preparing these old men for operation, my experience is that they do better on a bland mixed diet with milk and when allowed up and about, even with retention catheter or supra-pubic drainage, than they do in bed on a milk diet. Milk alone seems to be too much of a one-sided diet and there is nothing more disastrous to an old man than to put him to bed for any length of time.

In the post-operative treatment, the most important thing is a minimum loss of blood. It is surprising to know how little blood these old men can lose and it should never be more than a few c.c. Loss of blood markedly lowers the resistance of the patient to infection and also may cause a sudden drop in blood pressure with fatal results, before it can be corrected by artificial means. Bleeding should be controlled by ligation, a gauze pack, or hemostatic bags. On a recent visit to the Mayo Clinic, I was at first struck by the unusually large incision made for supra-pubic prostatectomy, but found this was done to give a good exposure of the capsule after the gland had been removed, in order to ligate the larger bleeding vessels and whip over the capsule to control any general oozing. It was remarkable to see how little bleeding these patients had after such treatment and a large incision in the bladder seems to heal as quickly as a small one if properly sutured.

A few years ago, irrigation following operation was very much the custom, but we are getting away from that more and more. Do not irrigate for several days after the operation, then use mild antiseptic, like 1 or 2% boric acid solution, once or twice daily.

Feeding should be started just as soon as the

patient's stomach will tolerate it—full liquid diet twenty-four to forty-eight hours after operation, and bland soft diet with milk on the third or fourth day.

The large rubber tube is left in the bladder five or six days. If the patient is doing well, replace this by a smaller one, which is kept in for three days; replace this by a still smaller one; remove in three days.

Epididymitis is a complication which is very annoying at times; this should be controlled by an ice bag or hot packs. If this is not satisfactory, make an incision and drain.

Suppuration in wound is best treated with hot packs of saturated solution of boric acid or 1 to 5000 potassium-permanganate solution.

Cases showing signs of uremia should be thoroughly filled with fluids, eliminative organs opened up by active catharsis, and hot packs used for twenty minutes every four to six hours.

Pyelo-nephritis is often a very serious complication; if it comes on immediately after operation, nearly always fatal; if a week or ten days after, not so serious. These patients should be given renal stimulants and supportive treatment as indicated, plenty of distilled water, and a restricted nephritic diet.

Sounds should never be passed until three weeks after operation; by this time the wound is healed. If done before that, one is very liable to get marked infection which means a serious complication.

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ASSOCIATED NERVOUS MANIFESTATIONS AND PSYCHOSES IN OBSTETRICS.*

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Before going into the special details concerning the various nervous manifestations associated with this department, it may be prudent to mention briefly several changes in the nervous system due to pregnancy, and a

*Read before the Richmond Academy of Medicine and Surgery on March 22, 1921.

word or two regarding the mental hygiene. It must be well borne in mind that an existing pregnancy with its allied conditions—parturition and lactation—calls forth an extra demand of energy from every cell, from every tissue and from every organ within the body. It diminishes the woman's vitality, debilitates her entire organism and brings about a physiological commotion in the nervous apparatus. This, in turn, brings to bear a strain upon her which is, even under normal conditions, attended by emotional irritability, depression and other reflexes. Pregnant women are more impressionable, subject to varying moods, are hyperexcitable, and sometimes a change in their character occurs, a quiet, sweet-tempered person becoming irritable, ill-tempered, low-spirited, and even hysterical, or vice versa. A tendency to melancholia occasionally develops and real psychoses are not uncommon, especially if there is a family taint. These symptoms may be the outcome of a toxemia, which pregnancy greatly invites. In the early months there is a tendency to sleep, especially after meals. Pregnant women frequently complain of a sort of fainting spell. It is accompanied by palpitation or fluttering of the heart, sometimes with pallor, and occasionally by slight loss of consciousness, resembling petit mal. The symptom, though annoying, is not dangerous, unless due to organic cardiac disease.

The condition of pregnancy, although within a physiological borderline, frequently invites nervous manifestations in varying degree. The mental state of the expectant mother should be preserved as far as possible in a happy, quiet atmosphere, filled with contentment, for it is generally known that sudden emotions, producing profound shock, are detrimental to the maternal organism and may, in turn, cause an interruption in pregnancy. She should be protected from all horrible, tragic, unpleasant and gruesome sights, from the hearing of accounts of disasters of all kinds, murders with what the press calls shocking details, and railway accidents with realistic descriptions. These are not points of theory, but facts which can be truly applied to actual cases. Entering superficially on the phase of maternal impressions, it may be said, in passing, that women with psychopathic tendencies, who are led to believe in these impressions, may in some instances

develop an anxiety psychosis marked by anxiety, restlessness and depression.

The processes of pregnancy make a deep impression on the woman's entire nervous system and more especially on her mental functions. This is especially true in the case of primiparae. The fact is easily understood, for a woman is filled with expectation and anxiety concerning the unknown event, the complete revolution in her organization, the formation of a new being within her uterus. Many reflexes are apt to occur. How many joyful hopes, how many distressing fears, are connected with that which is about to take place, with the act of creation within her bosom: what changeful glimpses into the future, on the one hand the gladness, on the other the terror of motherhood; often, also, the anxious doubts as to the probable sex of the newcomer. Consider, too, the stormy sensations experienced by a woman, who, unmarried, has become pregnant contrary to her desires and expectations, especially one in a poverty-stricken condition. Consider the agonizing thoughts in such a case regarding the consequences of giving birth to a child. In these cases there is nearly always a lack of prenatal care, associated, more or less, with various nervous manifestations, fears and the like and, in addition, a marked predisposition to the toxemias of pregnancy. It is only to be expected that in pregnant women in general there will almost always be increased irritability of the nervous system combined with a tendency to a rapid variation of emotional states. Neumann found in almost all the pregnant women whom he examined that there was an increase of knee-jerks, as a manifestation of the general increase of nervous tension. Nor does this change depend upon mental influences exclusively; there are other factors, such as the reflex processes aroused by the enlargement of the uterus.

The pathological consequences of pregnancy, as far as they affect the nervous system, take the form of neuralgia and of peripheral neuritis of various nerves, of chorea, of disturbances of the sense organs, and of actual psychoses. As is generally the case, these neuralgias have as a starting point some portion of the nervous system in which a pathological condition is present. The decay of teeth, so often observed during pregnancy, accounts for many of the

cases of obstinate toothache that annoy and distress these patients. In women who suffer from habitual constipation during pregnancy and in whom the size of the fetus is so great as to cause pressure upon the nerve trunks at the brim of the pelvis, obstinate cramp and sciatic pain may occasion great distress and may seriously affect the patient's general health. Some of the most severe of these cases result from the pressure of hardened fecal matter upon nerve trunks above the brim of the pelvis, and upon branches of nerves so situated that they may be pressed upon in the pelvic cavity. In some of these cases, the uterus will be found retroverted, thus preventing proper evacuation of the bowels and adding to the pressure that retained fecal matter excites. In other cases, the patients complain of cramp and of sudden spasmodic contraction of the thigh muscles, often becoming worse at night. When the disorder is severe, obstinate pain, radiating down the thigh as far as the knee or even below the knee, is often observed.

Pregnancy favors the occurrence of chorea, due, of course, to the increased irritability of certain nerve centers characteristic of the pregnant woman. This condition usually occurs in primiparae; it is commoner in young than in older pregnant women and seems to make its appearance in the early stages of gestation. In the large percentage of cases it usually disappears before the end of term. If patient grows steadily worse, the induction of premature delivery is sometimes followed by excellent results.

Hysteria does not seem to have a marked influence on the course of pregnancy. On the other hand, the hysterical symptoms may flare up and attacks become more frequent and the other nervous disturbances associated with hysteria become more pronounced.

The influence of pregnancy in epileptics is likewise variable. Attacks of epilepsy may occur in girls hereditarily predisposed when they reach the age of puberty and reoccur at each successive menstrual period. When such patients marry and give birth, their children show a marked neuropathic and psychopathic tendency. Another condition which may be closely associated with pregnancy and fortunately of rare occurrence is tetany. Especially in women, it occurs almost exclusively during pregnancy and the puerperal state. The tetany

of pregnancy usually runs a favorable course.

Even in the normal course of gestation, one of the usual concomitant features associated with it, namely the morning sickness, often causes great annoyance and distress. If this condition becomes aggravated, it may eventuate into a pernicious type and seriously affect the general health of the patient and finally necessitate the evacuation of the uterus. Fortunately, only about one-third, or 33 1/3%, of women are troubled with this reflex vomiting. The real cause is not definitely known; it may be toxic in origin. Primiparae are oftener affected than multiparae. It occurs oftener in the upper classes of society and in those with a neurotic tendency. Along with this, the slighter forms of mental disorder consist of perversions of taste and smell.

Of actual psychoses occurring during pregnancy, the commonest forms are melancholia and mania. The former condition which, according to Ripping, occurs in 84.4% of the cases, is usually very severe and is characterized by a peculiar dreamy condition; it often leads to suicide, or to infanticide immediately after delivery. The psychoses of pregnancy are seen with greater frequency in the second half of gestation; they occur especially in primiparae and are also commoner in unmarried women. The outcome, as a rule, is unfavorable; sometimes the mental disorder ends with the pregnancy, but in other cases it passes on into the puerperium lasting from six weeks to six months. These psychoses are usually toxic. In women whose nervous systems do not stand the strain of pregnancy well, there will be noted a disordered metabolism. In each case a careful history of the patient should be obtained from some reliable member of the family and also other points relating to the family traits. It has been noted that in these psychoses, hereditary influence plays an important role in about 50% of the cases. In certain neurotic women the existing pregnancy may produce a degree of fright that borders close upon mania.

PSYCHOSES OF PARTURITION.—Even during labor, acute insanity is sometimes observed in women who are hereditarily predisposed, when the pain is very severe. Ordinarily, the mental condition of the patient during the first stage does not differ from that of a woman suffering pain. In neuropathic subjects it may be

marked by hysterical manifestations. In the second stage, towards the end, she may become delirious or even maniacal from the suffering, but, fortunately, this is rare. In a certain number of cases the woman's behavior, instead of being cheerful, may be the opposite, the patient stating that she is unable to bear the pain or that she will surely die. Severe cramps in the legs frequently add to the suffering.

Even during labor, one of the most dangerous complications that may befall the pregnant woman is convulsions attended by coma. This we call eclampsia. During the seizures various nervous phenomena are brought to the surface, the characteristic picture being quite familiar to us all. Between the attacks the patient may be quiet or restless, and sometimes she may become uncontrollable with wild and exhaustive delirium. Frequently these patients have no recollection of what happened. The woman may even deny her child when presented to her. This forgetfulness may extend as far back as a week before the actual attacks began, and occasionally there is a general weakness of mentality for several months following delivery.

The puerperium may likewise be invaded by psychoses of melancholia and mania. In patients who are in a weakened state, exhaustion psychoses may occur after prolonged and difficult labors. In cases of generally contracted pelvis, or prolonged labor, pressure-paralysis may occur from the pressure exerted by the child's head upon the intra-pelvic nerves and, above all, on the great sciatic nerve; pressure-paralysis may also result from obstetrical operations, and especially from forceps delivery. The symptoms of pressure-paralysis consist chiefly of paralysis of the extensors of the feet and toes. Puerperal insanity is much more common than the insanity of pregnancy. Years ago it was quite a common complication but, since the standard of asepsis has been raised, there seems to have been quite a considerable drop. The first two weeks following delivery seem to be the time for its appearance. After this time it is commonly spoken of as "lactational insanity." Puerperal psychosis does not always have as its cause an infection; it may also be due to an auto-toxemia or directly to an unstable nervous system. However, infection is, by far, the most important point in the etiology. In these psychoses, the patients are, during the first few days, under great excite-

ment, associated with hallucinations. Later, the maniacal symptoms disappear and the patient passes into a state of depression and frequently shows tendencies towards suicide. Puerperal psychoses are not uncommon as a sequel to those cases of eclampsia having had many convulsions, but they usually offer a fairly good prognosis, the majority of the patients recovering within a few weeks. Those following infection are very difficult and resist treatment; from 20 to 40% of the women fail to obtain their normal mental condition. From 5 to 10% of these patients with puerperal insanity die, this being chiefly due to the infection rather than from the mental condition.

In patients who subsequently become pregnant there may be, and frequently there is, a reproduction of the mental picture. Each succeeding attack leaves its mark and the patient should be fully warned not to become pregnant.

SUMMARIZING.—The writer wishes to state that there is no form of psychosis peculiar *per se* to the child-bearing period but when it does occur, it assumes the clinical type in one or more of the recognized forms. In regard to the frequency of its development, by far the most frequent period is the puerperium (about 57%); 20% during pregnancy; during lactation about 17%, and from 4 to 6% during active labor.

Fortunately, the great majority of pregnant cases pass through the various stages untouched by the profound nervous manifestations and actual psychoses but, nevertheless, we must not lose sight of the fact that, the higher we ascend in the scales of civilization; the more complex the tissues become and the more they are rendered susceptible to the various nerve impulses. Civilization with its artificial dress and customs has rendered woman a lessened power of resistance; during pregnancy the whole metabolism is changed to meet the new demands on the system and it has been well said that "Gestation tests the integrity of every structure of the body." If there is any latent disease, nervous or otherwise, in the woman, pregnancy will bring it to the surface. This fact warns the accoucheur to study well the constitution of his patient and to observe carefully all weak points in the organism; to guard her from the disorders and complications of pregnancy, and from the dangers of excessive and too prolonged suffering.

216 East Franklin Street.

THE EFFECTS OF RADIUM AND X-RAY ON CANCER; ESPECIALLY SKIN LESIONS OF THE DISEASE.*

By C. AUGUSTUS SIMPSON, M. D., Washington, D. C.

Dermatologist to the Episcopal Eye and Ear Hospital, Providence and Washington Asylum Hospitals, Washington, D. C. Formerly on the Staff of the New York Skin and Cancer Hospital and Willard Parker Hospital, New York Health Department.

I read my first paper on the advantage and necessity of measuring the dose of x-ray with the pastille in the treatment of cancer in 1912.

The pastille still retains its position as a most efficient measuring device. X-ray machines and tubes have been enormously improved in the past few years until today doses of ray are given that were not dreamed of a few months ago.

The tendency for treatment machines is towards longer spark gaps and increased voltage, an improvement I have advocated for years. My present outfit, the one I have used for four years, consists of a 16 inch coil which delivers 50,000 more volts than the Coolidge tube will stand. In order to meet the capacity of this coil, I am ordering a modified Coolidge tube from Europe. With such an instrument, I should be able to deliver 30 to 40% of an erythematous or knockout dose to a cancer situated 10 centimeters below the surface of the body.

Intensive study of the biology of cancer cells has demonstrated that radiated cancer cells will not grow on transplantations and that three-quarters of an erythematous or skin dose of ray will inhibit mitotic figures in these cells and that 85 to 90% of an erythematous dose will destroy cancer cells, no matter if they be in a skin lesion, uterus or breast.

If a carcinoma can be brought under the influence of this amount of x-ray (which is possible by cross-firing), resolution of the tumor will almost certainly result.

This amount of ray still leaves a margin of safety for the bladder, intestines and rectum.

The use of thick filters of aluminum and copper has advanced to the point of producing what we call homogeneous radiation which cannot be altered by adding more filters.

As this technique comes into more general use, the tendency is to rely on the x-ray rather than the enormous amount of radium that would be required to equal it. It is known

that no other than a very wealthy or well endowed institution could afford enough radium to obviate the necessity of such enormous quantities of x-ray.

These facts seem enough to warrant the belief that with still further improvements of the x-ray, which one can safely anticipate, the individual purchase of very large quantities of radium is hardly called for.

Because of the location of much malignancy in cavities as the uterus or throat, radium in quantities of 50 to 200 mg. will always be valuable and popular, but even then massive doses of x-ray will tremendously improve the chances of the patient and lessen the time of application.

If there are the slightest signs or expectations of metastasis, it would be the height of folly to rely solely on radium to the exclusion of surgery, fulguration and massive doses of x-ray.

In the treatment of skin cancer, which most frequently means basal cell carcinoma, the process is enormously simplified. Here the lesion is on the surface, easy to approach and we know the quantity and quality of ray that will kill every cell in the tumor. Why give three to one dozen treatments to get a result? We do not, and a majority of my patients, close to 100 per cent, remain cured after one massive filtered dose of ray. The same I do almost daily with a 30 mg. double strength radium applicator. This is not at all unusual. Even with the older technique and fractional doses of roentgen ray, Pusey, as early as 1907, reported 76% of cures in a series of 111 cases that included squamous and prickle-cell carcinomas; Dochter 91%; E. G. Williams 95%; McKee, in 1919 with the new technique, reported 98%. I seriously doubt if any of these prominent dermatologists today allow a single case of cancer confined to the skin to go uncured. These high percentages mean more than the bare figures indicate. One extremely important and significant point that I must lay stress on is this: these physicians are skillful dermatologists, trained in their specialty to recognize clinically the change from a benign to a malignant lesion. Not only is the dermatologist taught to know, fear, and destroy precancerous lesions wherever they are found, but he learns to carefully scrutinize and study these lesions for which many might

*Read as part of a Symposium on Cancer before the Medical Society of the District of Columbia, in Washington, February 15, 1921.

consider minor and unimportant objective symptoms.

A tiny blood crust, a very slight hidden and obscure ulceration under an old crust of months' duration, a very slightly elevated waxy border on one edge of the lesion mean this to a dermatologist. It means that he is no longer dealing with a wart, mole, or other precancerous lesion, but is face to face with a true skin cancer. Half of the battle lies in the diagnosis, as you see.

Probably the most complete statistics on skin cancer are those published by McKee in 1919. Precancerous lesions were not considered in his series of 222 cases and 201 cures. Eliminating a number of cases that had received previous fractional doses of ray, or were hopeless from the beginning, his results show 98% cures. Every case was a malignant carcinoma, many several inches in diameter.

Of the cases that relapsed, 75% occurred during the first year. His statistics show that 19 of the 24 relapses were again treated with x-ray and that 17 recovered. The two cases that did not respond to roentgen ray later failed to resolute under radium.

Investigation of the relapses following roentgen ray treatment shows that 55% of failures were in patients who had previous fractional doses of ray. Ninety-five per cent of the cures were accomplished with from one to three massive doses of filtered ray which should teach us that, unless we are capable of dosing our tubes and carrying out the massive dose technique, other methods of treatment should be selected.

Experience teaches us that the few cases that fail to resolute under x-ray also fail to respond to radium and also that radium improperly applied has all the unfortunate sequelae that x-ray has in these cases. Here the importance of a correct diagnosis, careful technique, and massive doses applies to both forms of therapy. In one's enthusiasm for radium and x-ray, one should not be blind to the occasional advantages of curetting, fulguration, or excision in certain cases. The dermatologist who insists on the exclusive use of radium or x-ray, especially if there is a possibility of or obvious gland involvement, is not giving his patient the best chances for his life.

In conclusion, let me again insist that the cure of skin cancer is no longer a matter of

concern to the dermatologist who employs the modern technique of radium and x-ray. He accepts and undertakes the cure of the lesion as one of his easiest and least exacting duties, with positive cures closely approximating 100%.

Really, the massive measured dose technique of giving one and one-half to two erythematous doses of ray through one to three mm. of aluminum constitutes about as ideal form of treatment as is to be seen in modern medicine and surgery. Nearly all of these patients are beyond middle age, many in advanced stages of senility, at which time the thought or mention of even a minor surgical operation produces shock, alarm and anxiety.

Compare this dread to a ten minute exposure of x-ray. If this is distasteful to patients, they need not even leave their homes or beds. Many times I visit these older patients in their homes on my way to the office in the morning, and apply one of my two radium applicators. Then, about lunch time, four hours later, I call again to remove the radium, and in one month have a permanent cure without any pain or scar whatever.

Our results with quinine and salvarsan may be as brilliant but they certainly are not more durable.

1219 Connecticut Avenue.

ATYPICAL MASTOIDITIS WITH REPORT OF THREE CASES.

By ELYRNE GILL, M. D., Roanoke, Virginia.

Etiology, pathology, symptoms and signs of uncomplicated typical mastoiditis are well known to all competent otologists and a mere narration of these conditions would be of no avail. It is the purpose of the writer to report what is to his mind three cases of atypical mastoiditis.

CASE I. Carl D., age 11. History:—March 7th, 1920, left ear began discharging. March 11th swelling appeared above his zygoma. On the following day, March 12th, the swelling had extended almost to the median line of the head. Also swelling which resembled erysipelas extended across his face to the left eye. On the following day, March 13th, the right eyelid was swollen shut and on March 15th the swelling had left the eyelids on both sides. The swelling above his zygoma had increased in size and was now extended to the median

line of the forehead. From March 7th to March 15th the patient ran a temperature of 101 to 103.

On March 15th I advised and performed a simple mastoid operation, making the regular mastoid incision, different only in that I carried the incision higher than usual. When the incision extended through the periosteum about eight ounces of pus escaped. Pus was under the periosteum. On exposing the mastoid cortex, two small perforations were found, one just above and one just posterior to the spine of Henle. The mastoid cortex was opened and the antrum entered. There was no pus in the mastoid bone or antrum. The bone was in the stage of hyperemia and there were a few granulations in the mastoid antrum. The infection from the ear and from the evacuated pus was pneumococcus. The patient left the hospital a week following the operation and made a complete and uneventful recovery. The points of interest in this case are:—1. The short aural history which was not preceded by any systemic condition. 2. The sub-periosteal swelling was above the temporal ridge and extended to the median line of the forehead. 3. Absence of any pus in the mastoid process.

CASE II. L. T. S., age 50, was first seen March 5th, 1920. Patient gave the history of having had influenza for the week previous and was now suffering with pain in the left ear. Physical examination revealed a red and bulging drum membrane which was incised and was followed by profuse discharge. Patient did not give history of any previous ear trouble. The discharge continued for two weeks, during which time the patient had no mastoid tenderness and no pain but was running a temperature of 101 to 102½ each day. At the end of two weeks, on account of the profuse discharge which showed a pneumococcus infection and considerable elevation of temperature, I decided to send the patient to the hospital where she could have an x-ray examination of the mastoid as well as of the chest. The x-ray examination of the mastoid showed increased density and cloudiness but was not operative from an x-ray standpoint. The x-ray examination of the chest revealed a resolving broncho-pneumonia. In a few days her chest condition cleared up and her temperature dropped to the normal line and remained so for an entire week during which time the

aural discharge continued to be profuse. During this week the patient had absolutely no pain and no mastoid tenderness and the second x-ray examination of the mastoid showed a slight increase in the density and cloudiness but was not operative from an x-ray standpoint. The physical examination of the fundus of the ear showed a distinct sagging of the postero-superior wall. In spite of the negative x-ray reports and the normal temperature for a week and absence of any other signs of mastoiditis, a simple mastoid operation was advised for the following reasons:—1. There had been a continuous and profuse discharge for three weeks with no sign of abatement. 2. The distinct sagging of the postero-superior wall.

The operation was done March 26th, 1920. On opening the mastoid cortex, which was very thick, a profuse amount of pus escaped which was under pressure. The entire mastoid process was broken down throughout. There were a large number of post sinus cells. The entire mastoid tip was broken down and removed. A small area of dura was exposed in the middle fossa. The sinus was not exposed. The patient left the hospital one week following the operation. On May 10th, 1920, her hearing in the operative ear was practically as good as in the other. The points of interest in this case are as follows:—1. The absence of mastoid tenderness. 2. Normal temperature for one week preceding the operation. 3. Entire absence of pain. 4. The two x-ray examinations which did not indicate an operation from an x-ray standpoint.

CASE III. D. L. R., age 56, was first seen April 20th, 1920. Patient gave the following history:—On April 18th, patient began having pain in the right ear. Had had tonsillitis for a week previous. Physical examination on April 20th showed a marked furuncular condition of his external auditory canal. The swelling was so extensive as to prevent a satisfactory examination of the drum membrane. Patient had considerable pain and marked tenderness of the mastoid tip but not of the mastoid antrum. Pressure on the tragus caused severe pain. His temperature at this time was 103. My diagnosis at this time was furunculosis of the external auditory canal. The patient was placed on treatment for this condition and, when seen on the following day, Wednesday, April 21st, was feeling more comfortable and

his temperature was 101. The swelling of the external canal still prevented a satisfactory examination of the drum membrane. On Thursday morning, April 22nd, I received a telephone call from a member of the patient's family saying that his condition was worse than it had been and that he was suffering most excruciating pain. Examination at this date showed a small perforation in the superior quadrant of the drum membrane in the region of the vault. From it there was escaping a small amount of sero-sanguineous discharge. Patient was exceedingly tender over entire mastoid process. I was satisfied that the patient was suffering from suppurative mastoiditis and, upon that conviction, I advised an operation, provided x-ray examination confirmed my diagnosis. The x-ray examination revealed a marked increased density and cloudiness of the bone. The bacteriological examination of the aural discharge showed a pneumococcus infection.

On Thursday, April 22nd, 1920, a simple mastoid operation was performed. The entire mastoid process was very soft and broken down. Pus was present in the mastoid tip and mastoid antrum. A number of large cells were found posterior to the lateral sinus. Four days following the operation the patient developed erysipelas which disappeared after a week's duration. Patient left the hospital two weeks following the operation and made an uneventful recovery. The points of interest in this case are as follows:—1. History of ear trouble which was of only four days' standing. 2. The extensive furuncular condition which to a certain extent masked the symptoms arising from the middle ear.

612 MacBain Building.

GOITER OPERATIONS.

By WM. F. GRIGG, M. D., Richmond, Va.

This paper is not to advocate any new operations, or an experiment of any kind, but is a plea for local anesthesia, more especially in goiter operations.

Patients are not to be picked up and operated on as you would one with an acute appendix, but should be gone over very carefully from a physical and mental standpoint, at the same time gaining their absolute confi-

dence and assuring them that you are going to give them the very best of attention. By thus getting control of a patient mentally, there is no occasion to steal the goiter, as the patient will submit to an operation under local anesthesia, get on the table with a relatively normal pulse, and go through the operation with as good or better pulse than that with which she began, because she is already mentally cured. More especially is this true if you have taken time to be careful with your technique of the operation, and not to shock the patient by handling the parts roughly or cutting into tissues that have not been well anesthetized.

As a rule, these patients do not come from under a general anesthetic with a good pulse, especially if the goiter is very toxic.

The operation can be done with an anesthetic of low percentage and the tissues well infiltrated and blocked off and, in this way, there is very little if any shock to the nervous system and a good field to work in.

The operation should be done when there are certain definite indications, such as in goiter which causes pronounced pressure symptoms either from pressure on the trachea or blood vessels; in nodular goiter; in goiter which grows rapidly; in painful goiter; in goiter situated or growing down into the thorax when compression will be serious and operation more difficult with the lapse of time; in goiter that is producing symptoms of a toxic nature; in goiter that is colloidal that does not improve under treatment; in any goiter which continues to enlarge despite treatment; in goiter which causes the patient distress because of its unsightliness; and in patients whose general health does not improve and an operation would not be advisable at a later period.

Operation is contraindicated by extreme impairment of the general health; in a patient with greatly damaged heart; if goiter is receding and there is a gradual improvement of the general health.

After the patient has been prepared, select the kind of incision that is best suited for the particular case, but in most cases the low collar incision is the least conspicuous in after life, for this scar is more easily covered by a string of beads. Most patients are very sensitive about the scar, no matter how small it may be, and this low collar incision usually

*Read at the fiftieth annual meeting of the Medical Society of Virginia, in Richmond, October 28-31, 1919.

gives a good ample field in which to work, which is very necessary in local anesthesia work.

All operations should be preceded by a hypo of morphine thirty minutes before the operation, and, if cocaine is to be used, a hypo of morphine and atropine can be given just as the operation is begun, as the morphine counteracts the effects of the cocaine and quiets the patient.

If the patient has a tendency to be nervous, it is well to inject the skin with a fifth of one per cent. cocaine solution, as it takes effect quickly and gets control of the patient's confidence. The deeper tissues can be injected with a half of one per cent. of novocain, using just as much as you like, as there are no bad after-effects from its use.

Quick and good union of the parts is very necessary for a small scar. The anesthetic should be put well away from the line of incision, not where you expect to cut, but around the goiter completely. In this way there is a well anesthetized field, and one that is not distorted from the fluid injected and will heal rapidly. After reaching the deeper tissues, if there is not the degree of anesthesia desired, more can be injected, as there is not the occasion to hurry as under general anesthesia.

There is less hemorrhage and trauma to the parts under local anesthesia. There is not so much danger of cutting the recurrent laryngeal nerve; the patient can talk and the change in voice will indicate the location of the nerve as in twenty-five per cent. of the cases the nerve is not in its normal location. The parathyroids can better be preserved as there is less hemorrhage, a clean field, no occasion to hurry, and cut parts are well in view. There is no reaction from the anesthetic that might start up hemorrhage from exertion, or give the patient pneumonia.

Some operators who use general anesthetics advocate the injection of local anesthesia, just as if the general anesthesia was not given, to prevent shock. If that is the case, then why not use the local anesthesia only? It requires more patience on the part of the operator and takes longer to perform the operation, but local anesthesia is the safest to use in the majority of cases and the patient should be

given every chance for his life, if it does mean more work for the operator.

The technique of the operation is just the same as that of the ordinary operation under general anesthesia. The drainage tube should not be put in the line of the incision but a small tube should be brought through the skin about one inch below the incision in the median line; this gives good drainage and gets good union and a small scar.

In conclusion, if we think the patient has a better chance for his life and faculties in after-life under local than under general anesthesia, then by all means give him the chance as we would like to have it given us, if we were being operated on.

The following are reports of two cases, one of exophthalmic and the other of cystic goiter, operated on under local anesthesia.

Case No. 47. Miss Alice S., age 18, large right exophthalmic goiter of four years' standing; for the last year had grown very rapidly. She was getting very nervous, had to stop school. Pronounced eye symptoms. Was operated on July 17, 1917. Right lobe and isthmus and a small portion of left lobe were removed. She left the hospital on the fifth day and made a splendid recovery. General health is splendid at this time, with no symptoms of a return or other complications.

Case No. 48. Mr. W. M. L., age 38, was operated on October 17, 1917, for a large cystic goiter of the right side. It had been giving him marked pressure symptoms for the last six years and was increasing in size to such an extent as to be alarming to him. He left the Hospital on the sixth day, after the right lobe and isthmus had been removed, and made a good recovery. This being a cystic goiter there was very little loss of blood and no shock. He left the operating room in a rolling chair and stated he felt better than he did when he entered it, as the operation was over and he felt satisfied.

934 West Grace Street.

The Best Testimonial.

"Do you guarantee results in your nerve treatment?" asked the caller.

"You bet I do," replied the specialist. "Why, last week a man came to me for nerve treatment, and when I'd finished with him he tried to borrow \$50 from me."—N. Y. Globe.

REPORT OF A CASE OF GENERAL INFECTION DUE TO COLI.

By B. A. POPE, M. D., Newsoms, Va.

In the absence of any literature on this subject, we will not attempt a detailed discussion of this rather rare infection, but wish to report a case, giving briefly some of the symptoms and the treatment employed.

On March 8th, 1921, a colored boy, age 10 years, consulted us because of a general malaise, slight fever, diarrhea, pain in the back above the waist line and in the bowels in the region of the umbilicus. Two days later I was called to see this boy. At 11 A. M., temperature 104° with pain still in back and bowels and with slight diarrhea, heart and lungs negative. No urinalysis was made.

Suspecting typhoid fever, a blood culture was taken and sent to the State Board of Health for examination. They reported septicemia due to colon bacilli. A few days later, on request, another culture was sent, and the first report confirmed.

The family history was negative, general surroundings good. There are six children in the family, ages ranging from three years to eighteen years, and all save one boy about eighteen, were taken down one after another, ranging over a period of about three weeks.

In none of these other cases was the blood culture confirmed, although they all had similar symptoms.

The general treatment was a carbohydrate diet, sulphocarbolates and citrate potash by mouth, with bichloride mercury intravenously. When the bichloride was given early in the disease, its duration was shortened.

In reporting these cases I wish to stress the importance of a blood culture, as we in this section, are prone to give fever cases too much quinine, on the assumption of a malarial infection.

LABORATORY NOTE.

This is the first case of a true *B. Coli* septicemia in my experience. On two or three occasions this organism has been found but I was unable to obtain second cultures for confirmation. I feel that a second culture should always be examined to confirm the result before making a report. The colon bacillus found in this case was in no way peculiar culturally.

AUBREY H. STRAUS.

Public Health

Bacteriological Laboratory of The State Board of Health.

Owing to the increasing demand, our regular days for making Wassermann tests have been changed from Monday, Wednesday and Friday to Monday, Tuesday, Thursday and Friday. Certain questions about the Wassermanns are so frequently asked us that I will answer them here. We use only a single cholesterinized antigen. Only "4+" reactions are reported "positive," "3+" reactions are reported "doubtful positive," and all others are reported negative. A single test should never be considered as conclusive unless borne out by the clinical manifestations.

We cheerfully make second tests whenever requested. Furthermore, we are glad to have our work checked by other laboratories and where differences occur, it is helpful to us to know about them. For real comparative work, however, the blood submitted should be *identical*.

As warm weather approaches, let us again issue warning that all dogs' heads should be shipped us *iced*. Many reached us last summer too decomposed for examination.

Time is saved by addressing all communications directly to the Laboratory, 12th and Clay Streets, Richmond, Va.

AUBREY H. STRAUS, *Bacteriologist*.

The Truth About Medicine

During April the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Armour & Co.:

Suprarenalin Solution—Armour.

The Diarsenol Co.:

Silver Diarsenol.

Silver Diarsenol 0.05 Gm. Ampules.

Silver Diarsenol 0.1 Gm. Ampules.

Silver Diarsenol 0.15 Gm. Ampules.

Silver Diarsenol 0.2 Gm. Ampules.

Silver Diarsenol 0.25 Gm. Ampules.

Hynson, Westcott & Dunning:

Mercurochrome—220—Soluble.

Figures Never Lie.

"What are the chances of my recovery, doctor?"

"One hundred per cent. Medical records show that nine out of every ten die of the disease you have. Yours is the tenth case I've treated. Others all died. You're bound to get well. Statistics are statistics."—The American Legion Weekly.

Secretary's Announcement

Circulating Medical Library.

The books listed in this column may be borrowed by members of the Medical Society of Virginia in good standing, for a reasonable period of time. All are new and should prove valuable helps to general practitioners and also specialists. No red tape is required—simply write a card to the office of the society giving the name of the book wanted, your name and your address. The book may be kept for a period not exceeding thirty days. This plan has been worked out by the Publication Committee and, if this field of interest is developed, our library will be enlarged. Members are expected to pay postage only on the return of the book to this office.

- Tuberculosis of Children, MUCH.
 Practical Chemical Analysis of Blood, MYERS.
 Human Heredity, REDFIELD.
 Diseases of the Chest and Principles of Physical Diagnosis, NORRIS-LANDIS.
 Sexual Impotence, VECKI.
 Pasteur, the History of a Mind, DUCLAUX.
 Care and Feeding of Southern Babies, WILSON.
 Arteriosclerosis and Hypertension, WARFIELD.
 Syphilis, HAZEN.
 Diagnosis and Treatment of Brain Injuries, SHARPE.
 Wounds of Lung and Pleura, MORELLI-DAVIS-IRVING.
 Human Parasitology, RIVAS.
 Practical Physiology, BURTON-OPITZ.
 Massage and Exercises Combined, JENSEN.
 Short History of Nursing, DOCK-STEWART.
 Duodenal Tube, EINHORN.
 Diseases of the Intestines and Lower Alimentary Tract, BASSLER.
 Development of X-ray Plates and Films, WENDELL.
 Psychiatric-Neurologic Examination Methods, WIMMER-HOISHOLT.
 Practical Massage and Corrective Exercises, NISEN.
 Bacteriology for Nurses, CAREY.
 Physiology and Biochemistry in Modern Medicine, MACLEOD.
 Psycho-Pathology, KEMPF.
 Practical Tuberculosis, GAMMONS.
 Compend of Physiology, BRUBAKER.
 Handbook of Diseases of the Rectum, HIRSCHMAN.
 Surgical Shock and the Shockless Operation Through Anoci-Association, CRILE-LOWER.
 Fundamentals of Human Anatomy, PITZMAN.
 An Epitome of Hydrotherapy, BARUCH.
 Manual of Obstetrics, HIRST.
 Manual of Obstetrics, 2nd edition, DAVIS.
 Diseases of Infants and Children (2 vols.), GRIFFITH.
 Pathogenic Bacteria and Protozoa, McFARLAND.
 Nervous and Mental Disases, CHURCH-PETERSON.
 Pope's Manual of Nursing Procedure, AMY E. POPE.

After Treatment of Surgical Patients (2 vols.), BARTLETT.
 Orthopedic and Reconstruction Surgery, ALBEE.
 Diseases of Nutrition and Infant Feeding, MORSE-TALBOT.
 Operative Surgery, McPATRICK.

Nine Per Cent Dividend!

It has been estimated that the physicians of Virginia pay from fifty thousand to seventy-five thousand dollars annually for telephone service. Since the war, several companies, chiefly subsidiaries of the American Telephone and Telegraph Company, have either been allowed to increase their rates or have been allowed to continue the arbitrarily fixed rates created by the former Postmaster-General. A recent notice sent out by the local company contained the cheering information that the nice dividend of nine per cent had been declared and that its stock was therefore selling at, or better than, par. The companies, therefore, expect to have no trouble in raising money for further extensions, etc.

On what grounds these increases were granted is not known. Their plea before the State Corporation Commission for permission to make increases does not have the same ring as their jubilant notice to the public of a nine per cent dividend. It is our estimate that the increases granted taxed on an average each physician in the State not less than fifty cents per month—which totals more than twelve thousand dollars per year from this source. This information, believed to be correct, is given you that you may know where some of your money goes.

G. H. WINFREY, *Secretary-Treasurer.*

Medical Education

The Medical School of the University of Virginia.*

In order that a wise decision may be reached as to where the State of Virginia should develop the Medical Department of the State University, we must begin with a clear conception of what, in its essence, medical education is.

Medical education is an elaborate process, involving:

(1) Considerable training in science before the student enters the medical school:

*Sent this journal for publication by Dr. Theodore Hough, dean of Department of Medicine at the University of Virginia.

(2) Four years in the medical school; and

(3) An internship of a year or two after graduation from the medical school.

Even at the end of this elaborate process the graduate in medicine is hardly yet a doctor; he is, however, ready to enter upon the cautious practice of the profession, with a training that, if he is industrious, will make of him a sound practitioner of medicine and surgery.

(4) Practice or experience, therefore, rounds out medical education.

There are thus four successive stages through which the young practitioner passes: First, he gets a scientific training in fundamental general science. This he receives in college. Second, he gets four years of training in the medical sciences and in the main clinical branches. This period he spends in the medical school. Third, he gets a year or two of hospital internship in the university hospital or some other hospital. Fourth, he begins the practical career which ultimately equips him as a practitioner of medicine.

I have said that the prospective medical student passes the first stage in college. There he is supposed to master the technique of physics, chemistry and biology to acquire the important fundamental scientific conceptions which he will need throughout his scientific career. Time was when persons connected with independent or proprietary schools of medicine supposed that this preliminary scientific instruction could be furnished by the medical schools themselves, and a few schools undertook to furnish it. But the effort was not successful, because even practitioners of medicine came to see that it is not only important to learn scientific laws and facts, but that it is even more important for the young student to breathe the atmosphere of science in laboratories where a spirit of inquiry prevails, and to work with teachers who have a broad scientific training and outlook. This atmosphere and these teachers are to be found only in institutions of learning, and for this reason it is now universally admitted that the student must receive his fundamental scientific training in a well equipped and well developed college or university.

We come next to the medical curriculum proper, the four-year course leading to the M. D. degree. What is the object of this course? Its object is evidently not to make

doctors, because, if such were case, the four-year course would not have to be followed by an internship in a hospital. The four-year medical course can, at most, ground the student in the fundamental medical sciences, train him in the art and technique of diagnosis and give him a limited practical experience in using his knowledge and his technique under the eye of trained teachers; thus, by the time he leaves the medical school the student will have mastered the tools which will ultimately enable him to practice medicine and surgery with safety and intelligence. Medical education is, as has been well said, mostly education, not mostly practice. The range of disease is so vast that it is utterly impossible for the student to master it or to master any considerable portion of it during his four-year course in the medical school. Indeed, he spends over two years learning anatomy, physiology, chemistry, bio-chemistry, pharmacology, etc., which are, once more, only the tools by means of which he is going to grapple with the problems of disease. Then follow two brief years in which at the most he can be trained how to use the technique and knowledge which he has been acquiring, how to observe, how to reason, and how, in a few representative instances, to deal with pathological conditions. The medical curriculum, therefore, does not produce doctors. It trains men in the knowledge and use of a technique by means of which they may in time hope to become physicians and surgeons.

Where can the student best get his training?

In the old days when the medical school, without any preliminary requirement and without any interne requirement, used to turn out doctors in large numbers, medical education was in the hands of local groups of physicians; but, as the resources of science increased, and as men began to realize that even a four-year medical course could not make a doctor, the seat of medical education was transferred from the local proprietary group to the university. The independent medical school has practically disappeared in the last ten years, and it has disappeared because it does not fulfill the conditions required by modern medical education. The universities have simply had to take charge of medical education, because they alone have the facilities and they alone have the correct point of view and spirit. Universities exist to train men not in the immedi-

ate doing of practical tasks but in the discipline and the technique through which practical tasks may be ultimately accomplished in the most enlightened and progressive manner.

At the conclusion of his four-year course of study our young graduate in medicine has acquired the fundamentals of the underlying sciences: he has been taught how to apply his knowledge to the observation of pathological conditions, how to make a diagnosis, and in a limited way how to manage a few representative diseases. Now he has his armament, his equipment, his tools, his point of view. At this stage he enters the hospital, where, if he has been well trained up to this time, he will make rapid progress in learning how to deal with the varied conditions which he encounters in the wards and dispensary. At the end of a year or two he should be ready to go out into the world, preferably in association with an older physician, but in any case his progress towards independence should henceforth be rapid and substantial.

With this brief account of medical education I suspect that most teachers of medicine in these days would be disposed to agree. You will observe that the first two stages belong on this view of the case to the university. There is here in Virginia, as I understand it, no difference of opinion on these points. Everybody agrees that the university should control the teaching in the fundamental sciences and everybody agrees that the university should organize and conduct the medical department. There is but one question to be answered, namely, where should the university conduct the medical school—on its own campus or in a remote city such as Richmond?

Where should the medical school be located?

If the university were itself situated in Richmond or Norfolk, nobody would dream of suggesting that the medical school should be located somewhere else. That is, everybody would admit that the school would be stronger, and university administration would be more effective, if the entire university were concentrated. Everybody would admit that university spirit would be weaker and university administration less effective in any department—medicine, engineering, law, or what not—which was removed from the university campus. I take it therefore that, generally speaking, everybody would be in favor of concentration and against

dispersion. The burden of proof rests, therefore, upon those who favor removal. They must show that medical education will gain, not lose, by the transfer of the medical school from Charlottesville to Richmond.

In order that the university may train its students most effectually during the four years of the medical course, it needs, in the first place, laboratories, teaching staff and teaching facilities in the fields of anatomy, physiology, pathology, bacteriology, bio-chemistry and pharmacology. These laboratories are not independent of each other, nor are they independent of other scientific branches which the university develops. The various sciences are continuously intersecting one another, so that no one of them and no group of them can be detached without loss to itself and to its fellows. As far as these sciences are concerned, therefore, they cannot be detached from the university without injury to themselves and to other sciences. The medical sciences will suffer if they leave the university campus. And if they suffer, medical education is to that extent injured. This proposition would also, I believe, be accepted by all.

There is, therefore, only one point in respect to which Richmond or Norfolk could possibly be superior to Charlottesville as the site of the university medical school, viz., in respect to clinical facilities. Let us consider this point in the light of what has been previously said regarding the essence of the student's medical training.

For its clinical teaching the university needs a teaching hospital—that is, a hospital the wards of which are connected with laboratories and classrooms in which disease can be studied and in which the art of diagnosis can be taught. There must be patients numerous enough and varied enough to furnish the material by means of which the student can be trained, and by means of which the teacher may continue to be himself a student of the unsolved problems of disease. It is not necessary that this material should be absolutely unlimited in amount or even that it should contain all possible varieties of disease; there must, however, be so many patients that no patient need be worked over by too many students, and there must be variety enough to illustrate the various methods of differentiation which the scientific physician employs in arriving at a diagnosis. If

the clinical material satisfies these conditions, it is of fundamental importance that it should be entirely under the control of the university, and that physicians and surgeons should enjoy the collaboration and stimulus of scientists working in contiguous and overlapping fields. For these sciences, not themselves medical sciences, bear every day more and more intimately on medical progress and medical education.

As compared with a large city, a small university town is at a disadvantage in respect to the development of an out-patient department and a clinic for acute and infectious diseases. Yet the experience of the German universities and of some of the American universities in small towns shows that a good substitute for an out-patient department can be developed by utilizing, first, local material; second, student material; third, ambulant patients who come to the university for diagnosis. Experience also shows that a medical clinic and clinics in the essential specialties can be built up in small places, for patients who seek the university clinic on account of the advantages it offers. The study of infectious disease can be managed in one of several ways and is not of sufficient importance to be the deciding factor.

We come thus to the hub of the whole matter. Can adequate medical and surgical clinics be built up at Charlottesville? The answer is given by Ann Arbor, which has developed one of the best medical schools in the country in a small town, and by Iowa City, which is developing what will undoubtedly be one of the important medical centers of the Middle West in another small town. Ann Arbor and Iowa City are, moreover, mere university towns—both inferior, I suspect, to Charlottesville in respect to the matter which we are discussing. The same answer was long ago given by the German universities. Great and successful medical schools have been developed on the continent by universities situated in small communities. At the time of my study of medical education in Europe, Greifswald had a population of some 20,000; it had a university hospital of 478 beds; Marburg had a population of 20,000 and a university hospital of 664 beds; Tübingen, a population of less than 17,000 with a university hospital of 881 beds; Göttingen, a population of 34,000 with a university hospital of 458 beds. The fact is that a university hospital, adequate in size and in the variety

of material, can be developed on the site of the university. Of course there are certain respects in which these hospitals are less developed than the corresponding hospitals in large cities. This is a regrettable loss, but, if one remembers what we have said above as to the precise function of the medical school in medical education, it is clear that these defects are not so very serious, since they can be remedied by the subsequent experience of the student as interne. To some extent, time cures the defect, for the small town becomes larger; and though it may never reach metropolitan size, Charlottesville will in course of time doubtless contain in itself and its immediate vicinity a population numerous enough to remedy in a measure the one disadvantage which it has to combat.

The real question, therefore, is this: Is the university clinic, situated upon the university campus in close contact with scientific workers and scientific ideals, likely to be a better training school than a department of medicine situated in a remote city away from university control and university stimulus? For, as I have urged, the medical school is a training school; it is not the whole of the student's medical education; it has in any event to be supplemented by an internship. "No one assumes," says Dr. Cole, Physician-in-Chief to the Hospital of the Rockefeller Institute, "that immediately after a student obtains his degree he is a capable or even satisfactory practitioner of medicine. Where will the student get the wider experience and practice in technique? He will get it in the hospital or in actual practice."

There is another consideration to which I should be disposed to attach a good deal of importance. For many years medical education was in this country in the hands of practising physicians. Some years ago the teaching of the so-called laboratory branches was placed in the hands of full-time men who devoted their entire time to their respective subjects. Meanwhile, practising physicians continued to teach the clinical subjects. It is now becoming very clear that clinical teaching like laboratory teaching is a man's job; the part of the practitioner and of the practising physician is therefore becoming more and more restricted, less and less important. There is therefore from this point of view less and less

to be gained from locating the university department of medicine in a large city as such. The same is true of many of the facilities in the way of hospitals that are located in large cities. Municipal hospitals and other establishments supported by endowment or subscription, but in themselves not controlled by the university, are of steadily diminishing importance. The teaching of medicine, in a word, requires not quantity of material, but quality. Granted a minimum, it is much more important that the university control its material completely and that the university be equipped for its efficient use than that the university medical school should be affiliated with or related to a number of institutions which it does not completely manage.

DENTISTRY, PHARMACY AND GRADUATE SCHOOLS.

The other questions which are raised now as to the location of the dental school or the school of pharmacy are not of prime importance. Iowa City has a very large and prosperous dental department, so that it is quite obvious if the State wishes to develop dentistry as a department of the university it can be done at Charlottesville. The same is equally true of pharmacy, though a question might be raised as to whether pharmacy should in these days be regarded as a university department. As to graduate work, there is a good deal of confused thinking. If graduate work means research, there is an added reason for proximity to the scientific departments of the university—an added reason for the university location; if, however, graduate work means polyclinic opportunities for men in practice, then only the great cities—Berlin, Vienna, New York, Chicago, etc.—have much to offer.

In my judgment the most important factor is *university contacts, ideals and activities*. The Medical Department of the University of Virginia must train physicians in a scientific spirit and it must advance our knowledge of disease. All the sciences known to man and others that the future will develop play a part in both these processes—both in training students and in investigating the unsolved problems of disease. Team play in which all the resources of science are brought to bear is possible on the university campus; it cannot be secured elsewhere to anything like the same extent. *It is easier and cheaper to bring patients to Charlottesville than to reproduce the university*

laboratories, workers, libraries, and spirit anywhere else. Defects have to be remedied in either case; but the Charlottesville defects can be largely remedied by a proper internship; the Richmond defects are inherent and cannot, I should fear, be remedied at all.

EXPENSE.

As far as I can observe, the question of relative expense is of little practical importance. The Charlottesville hospital is excellent but will need extension. New permanent laboratory facilities will have to be provided. The Richmond plant is more extensive, but is of no considerable value. The difference in investment required either for the creation of the medical department or its maintenance would not be enough in either case to influence opinion one way or the other.

Under these circumstances, if the question were put to me as to where the State of Texas should locate its medical school, I should say at Austin, not at Houston or San Antonio. If the State of Iowa asked me the question, I should say at Iowa City, not at Des Moines. If the State of Michigan asked, I should say at Ann Arbor, not at Detroit. If Wisconsin asked, I should say Madison, not Milwaukee; and now that Virginia asks, I should say for the same reason Charlottesville, not Richmond or Norfolk. I should add that in every case if the decision is made in favor of the university town, there must be legislation such as has already been adopted in Iowa and in Michigan for the purpose of facilitating the flow of clinical material to the university hospital.

CONCLUSION.

One hesitates to participate in discussions of this kind, because, as a rule, they cannot be decided simply upon the basis of merit. Local or institutional interests usually arise to confuse the issue; and so the solution adopted is either a compromise or else a victory for the party which can apply the greater pressure. But the present situation is plainly different; I have accepted the invitation to confer with you because I have become convinced that all parties—the physicians of Richmond, the university authorities and the lay members of this Commission—desire to find and to adopt the sound solution. It is of the highest social and educational importance to this Commonwealth that the Commission should pursue this policy, for the decision which you reach will be a

permanent one; it will for all time determine not only where the State of Virginia is to create its medical school, but what type of medical school the State will develop. It is my conviction—a conviction born of observation over a very wide area—that Virginia will hardly be able to develop a school of the highest grade, except as an immediate part of the State University at Charlottesville. A serviceable institution can be undoubtedly created elsewhere, but it will cost as much, and, lacking the cooperation and stimulus of other university departments, will, I fear, necessarily be upon a somewhat lower scientific and educational plane.

(Signed) ABRAHAM FLEXNER.

March 24, 1921.

Proceedings of Societies

The Southwestern Virginia Medical Society

Held its semi-annual meeting in Pulaski, May 11 and 12, with the largest attendance in the history of the society. Interesting papers were presented by a number of the members. The symposium on "Cardio-Vascular-Renal System" was handled by Drs. J. W. Preston, S. B. Cary and A. P. Jones, of Roanoke; F. H. Smith, Abingdon, and A. B. Greiner, Rural Retreat. This was freely discussed, Dr. L. G. Pedigo, of Roanoke, opening the discussion. Dr. Stephen Watts, of the University of Virginia, by invitation, made an address on "Surgery of the Breast." Mr. G. H. Winfrey, secretary-treasurer of the Medical Society of Virginia, was in attendance and gave a short talk on non-medical subjects. A banquet at Maple Shade Inn featured the evening session of the first day.

The next meeting will be held at Marion, September 21 and 22, at which time new officers and the delegates to the Lynchburg meeting of the Medical Society of Virginia will be elected. Dr. W. R. Rogers, Bristol, is at this time president of the Society and Dr. E. G. Gill, Roanoke, secretary-treasurer.

Valley Medical Association.

There was an attendance of over fifty out of a membership of a little more than sixty at the meeting of this association in Staunton, Va., May 26. Dr. M. J. Payne, of Staunton,

is president; Dr. Chas. E. Conrad, Harrisonburg, vice-president; Dr. Ashby C. Byers, Harrisonburg, secretary, and Dr. J. M. Biedler, also of Harrisonburg, treasurer.

Among those reporting clinical cases at the morning session were Drs. Conrad and Miller, of Harrisonburg, and Drs. Bradford, Payne, Bell and Phelps, of Staunton. A number of interesting and instructive papers were read at both morning and afternoon sessions. Between these sessions, luncheon was served those attending and in the evening a most enjoyable smoker was tendered the visitors by the local profession.

The next meeting is to be held at Winchester, in September, 1921.

Medical Society of Northern Virginia and District of Columbia.

With more than seventy members in attendance, this society held its semi-annual meeting in Alexandria, Va., May the 18th, the opening session being at 10 a. m. A recess was taken at 1:30 for a luncheon given those in attendance. Several interesting papers were read and the following officers were elected for the ensuing year: President, Dr. Stephen Harnsberger, Warrenton, Va.; Vice-Presidents, Drs. Wm. L. Lewis, Kensington, Md., and Daniel Borden, Washington, D. C.; Recording Secretary, Dr. Wm. T. Davis; Corresponding Secretary, Dr. Jos. D. Rogers; Treasurer, Dr. Robt. S. Lamb, the last three of Washington, D. C.

The next meeting will be held in Washington, November 16, 1921.

The Association of Southern Railway Surgeons,

At their annual meeting in Mobile, Ala., in May, elected the following officers: President, Dr. T. D. Walker, Cochran, Ga.; Vice-Presidents, Drs. J. W. McGehee, Reidsville, N. C.; H. R. Black, Spartanburg, S. C., and R. J. Griffin, Moundsville, Ala.; Historian, Dr. Geo. Ross, Richmond, Va.; Secretary-Treasurer, Miss Edith A. Foltz, Washington, D. C. New members of the executive council are Drs. W. S. Nash, Knoxville, Tenn., and D. K. Briggs, Blackville, S. C. Those holding over are Drs. F. R. Gobel, English, Ind.; E. P. Solomon, Birmingham, Ala., and E. D. Martin, New Orleans.

The South Piedmont Medical Society,

At its semi-annual meeting in April, elected the following officers for the ensuing year:—President, Dr. Elisha Barksdale, Lynchburg; Vice-Presidents, Drs. F. J. Gregory, Keysville; C. L. Bailey, Danville; R. H. Fuller, Clover; D. P. Scott, Lynchburg; Secretary-Treasurer, Dr. George A. Stover (re-elected), South Boston.

The Virginia State Nurses' Association and the Virginia State League of Nursing Education.

Met jointly in Danville, Va., May 25-26-27. In addition to papers read on subjects pertaining to general efficiency of hospitals and training schools, round table conferences were held for public health, institutional and private duty workers.

At the meeting of the League of Nursing Education, well prepared papers were read by Miss Celia Brian, superintendent of the Danville General Hospital, and Dr. J. Allison Hodges, formerly of the Hygeia Hospital, Richmond. The subject of Miss Brian's paper was "The Future Training of the Student Nurse from the Standpoint of a Nurse," and of Dr. Hodges' paper, "The Future Training of the Student Nurse from the Standpoint of a Physician."

The president of the League of Nursing Education embodied in her address a review of the advancement of nursing education, since the organization of the National League in 1893, which showed at various times the attempts of local physicians in various sections to retard the progress of nursing education, each time, however, reacting beneficially, by gaining the high minded support for higher standards, from the medical profession, the nursing profession and the laity in general.

Dr. Hodges' paper related mostly to the inequality of the supply and demand of both student and graduate nurses, claiming the shortage of students was due to educational requirements for admittance to training school and to the three years' course. It was not the desire, the speaker said, to be destructive, but on the contrary to rectify an economic condition, if it existed, and to be both constructive and conservative. He also referred to the necessity of training attendants.

In the paper of Miss Brian's and in the dis-

cussion of same, the following facts were most forcibly brought out:—

FIRST.—That the 3 years' course has been taken unfair advantage of by the majority of hospitals, as from the onset the 3 years' course was to be divided into a schedule of 56 hours weekly and not to work students 12 to 18 hours as was done under the old working basis.

SECOND.—Hospitals are primarily for the care of the sick and all hospitals should not endeavor to be institutions of learning or have training schools for nurses attached to them, as it reacts harmfully to the hospital, the patients and the physician, unless proper standards can be maintained. Hospitals unable to maintain the curriculum as outlined by the Virginia League of Nursing Education for the Training of Nurses should employ graduate nurses, or attendants, or both.

THIRD.—Hospitals unable to provide suitable facilities, etc., for the teaching of student nurses or unable to meet the requirements of the State Board of Nurse Examiners could be used for a training school for attendants. The training of attendants has been seriously and earnestly advocated by the Virginia State Nurses' Association for many years; in fact, in 1918 a law was enacted by the State Legislature which gave the power to the State Association through its examining board to open centers for training attendants at their discretion. It was entitled "An Act to Train Attendants" and was an emergency measure for the war, but was so worded that it could be maintained thereafter by legislative proceeding.

FOURTH.—Answers to questionnaires read showed that 50% of the schools in the State had a sufficient number of students; these schools being those that maintain the highest standards.

Graphic charts were displayed showing the consensus of opinion of graduate nurses, who had been written to in order to come at some definite conclusions and figures.

Graduate nurses advocating a 2 years' course for students in training, 19%; those advancing a continuance of the 3 years' course, 73%; advocating a 2½ years' course, 2%; advocating a 4 years' course, 1%; graduate nurses who would recommend training to other young women, 76%; who would not advise other young women to go in training, 11%.

EDUCATION OF GRADUATE NURSES BEFORE GOING IN TRAINING.

Private school only, 24%; grammar school only, 11%; high school 1 year, 6%; high school 2 years, 10%; high school 3 years or more, 17%; high school graduates, 52%; normal school, 12%; attending college, 20%; college or university degree, 6%; no answers received, 5%.

Seventy-one per cent of graduate nurses were not dependent on training school allowance while in training, 29% were dependent.

Ninety per cent were satisfied with training received; 8% were not.

Central training schools for nurses were again strongly advocated. Resolutions adopted included the following: In view of the fact that some nurses, not the majority, however, are refusing to take night work, thereby working hardships on those who unselfishly answer all calls, we individually and collectively protest against this and pledge our support to the correction of this practice. Letters will be sent to all doctors of the State, recommending them to pay not over \$20.00 weekly for the services of attendants so as to prohibit any excessive charges.

Miss Anne Gulley, of Leesburg, Va., was re-elected president of the State Association.

Miss Rose Zimmern Van Vort, superintendent of the Stuart Circle Hospital, Richmond, was elected president of the Virginia State League of Nursing Education for the fourth consecutive year.

Book Announcements

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the A. M. A. for 1920. Cloth. Price, postpaid, \$1.00. Pp. 72. Chicago: American Medical Association, 1921.

While New and Nonofficial Remedies consists in part of descriptions of those proprietary medicines which the Council deemed worthy of consideration by the medical profession, the Annual Reports of the Council on Pharmacy and Chemistry describe the preparations which the Council finds unworthy of recognition. In addition, these annual reports contain other announcements of the council.

The present volume contains a number of interesting reports. Thus we find a statement which makes it clear that many of the large

pharmaceutical houses are definitely opposed to the work of the Council and will remain antagonistic until a very large proportion of the medical profession will give the Council their active support. The volume also contains a report on some digitalis preparations which the Council examined and declared to be pharmacopeial digitalis products and therefore do not require the control of the Council.

Human Heredity. By CASPER L. REDFIELD, Author of Control of Heredity, Dynamic Evolution, Great Men, etc. Chicago. Heredity Publishing Company. 1921. Cloth. 107 pages. Price, \$1.50 net.

Operative Surgery. For Students and Practitioners. By JOHN J. McGRATH, M. D., F. A. C. S., Professor of Surgery, Fordham University; Consulting Surgeon to the Peoples Hospital, etc. Sixth Revised Edition. With 369 illustrations, including full-page color and half-tone. Philadelphia. F. A. Davis Company, Publishers. 1921. Cloth. 863 pages. Price, \$8.00 net.

Institute on Venereal Disease and Social Hygiene for 1921.

Owing to the success of last year's Institute on Venereal Disease and Social Hygiene, Surgeon General Hugh S. Cumming is planning a more extensive series of courses for this Fall. It is to be held in Washington, either from October 31 to November 12, or from November 21 to December 3. From twenty to thirty courses are offered and the faculty will be composed of 75 to 100 leading authorities.

Censorship of Movies.

We note from *The Social Hygiene Bulletin* that Governor Miller of New York has signed the Clayton-Lusk bill, providing for the regulation of moving pictures in New York, thus making it a law. From this it is certain that efforts will be made both within and without the moving picture industry to improve the pictures.

U. S. Public Health Hospitals.

Much progress is being made in the U. S. Public Health Service hospital program. Nine new hospitals, which will accommodate more than 3,000 patients, will soon be ready for occupancy. These are principally in the western states but one is to be at Dawson Springs, Ky. These hospitals are for the treatment of tuberculous, nervous and mental, and general patients.

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Editorial

Our New Medical School.

The doctors of Virginia have a grave duty before them. They have also a great privilege and opportunity. It is a duty to themselves, a duty to the people of this State, of this and succeeding generations, to give intelligent direction to this medical school question. It is a privilege which has been never before, in all the years of Virginia's history, so squarely and clearly put within the doctor's power to do something great for medical education in the Old Dominion.

For more than a year, the VIRGINIA MEDICAL MONTHLY has conducted a department on *Medical Education*. In this department an effort has been made to lay before our readers the best thought on the subject of medical education. The reports of Special Commissions and studies of the subject by experts in this field have been quoted. And now, a commission, appointed under the direction of the last Legislature, has completed its investigation and has prepared its report on medical education in the State of Virginia.

The commission, according to published reports in the daily press, came to the conclusion that there should be only one State supported medical school in Virginia; that this school should be under the University of Virginia; that the details of organization of the school should reside in authorities of the University of Virginia; that a divided course, first

two years to be at the University in Charlottesville and the last two in Richmond, would be expensive and unwise; and that the location of the entire medical department of the University of Virginia, controlled and operated by the trustees of that institution, should be in Richmond.

Ultimately, no doubt, the decision as to the location of the Medical Department of the University of Virginia will be a matter which the Legislature must settle. The members of the next Legislature who will settle this issue may be influenced in their decision largely by the doctors of the State. The doctors have no right to allow this expert and special knowledge which they have on this subject to remain dormant and unused. They should, at once, in every locality take a personal, active, and determined interest in this question and see that the views and opinions of the medical mind of this State are felt in a telling way when the decision is put up to the Legislature for action. Not only is the proper location of this one school a most important and urgent matter, but also the general plan, upon broad and scientific lines for the development of this one medical school of the State, is a companion and interlocked problem of equal importance. This one medical school of the future should be better than either of the two we now have; if so, the opportunity is not lost and Virginia will be better off in this important field in the future than in the past.

The commission's report should be studied carefully by the doctors throughout the State. Having fairly and impartially studied the arguments presented and having weighed the matter as related to medical education in its best form, the opinion as to the location of this department of the University should be decided by each individual in his own mind. Having reached an impartial decision, it is hoped that each doctor in the State will take off his coat and fight for the establishment of the medical school of the highest type. Doctors of this State can be a strong factor in intelligently directing the Legislature on this subject and should exert this influence.

In connection with this subject, our readers are referred to the following extract from the lay press describing plans for the amalgamation of the Columbia University and the Pres-

byterian Hospital, New York City, which shows some of the problems found in our own State. The details of reorganization of these institutions and the formation therefrom of a greater and more efficient medical school are hinted at. In this article, we may see some of the factors in the evolution of our medical school problem. As stated, these plans are the result of twenty years of study and negotiation.

Medical Centre Plans Announced.*

Plans for the organization of the \$15,000,000 medical centre which is to arise in New York City, through the permanent alliance just effected between the Medical School of Columbia University and the Presbyterian Hospital, have been announced at the university. The plans, drawn up by the Columbia Faculty of Medicine, and sanctioned by both the trustees of the University and the Board of Managers of the Hospital, embody the final stages of development in a broad scheme of administration and control whose fundamentals, stated by President Nicholas Murray Butler nearly twenty years ago, began progressively to take working form under the deanship of Dr. S. W. Lambert, who resigned two years ago.

The appointment of Dr. Allen O. Whipple of the Presbyterian Hospital staff, as Professor of Surgery and Director of the Surgical Service, and of Dr. Walter W. Palmer of Johns Hopkins University, as Bard Professor of Medicine and Director of the Medical Service, also were made known. These two men with the greater part of their staffs at the hospital will confine their efforts to work in the school and hospital. Dr. Herbert B. Wilcox has been appointed Carpentier Professor of Diseases of Children to succeed Dr. L. Emmett Holt, who has resigned after what his colleagues described as twenty brilliant and successful years of service as head of this department.

It has been decided to defer the installation of the university plan of organization in the department until the completion of the new school and hospital. It is planned, however, to increase the laboratory and scientific work as rapidly as possible so that when the new plant becomes available the proper organization shall have been developed.

The Departments of Medicine and Surgery will be reorganized on the university basis on

July 1, 1921, as far as may be possible with the present facilities at the Presbyterian Hospital and with the budget at present available.

SPECIAL INSTITUTES PLANNED.

As announced by Dean William Darrach, the plans for the new medical centre, assured by gifts of about \$11,000,000 already made, contemplate the building up of special institutes, utilizing such hospitals as the Sloane Hospital for Women and the Vanderbilt Clinic, and the expansion of research and graduate work.

Discussing the question of hospital and dispensary, the authors of the plan assert that the University Hospital must be in close geographical and functional relation to the medical school. "It must be planned to contain sufficient beds to supply the clinical material necessary for classes of 100 students," it was stated. "The school should then limit its undergraduate teaching to the University Hospital, except where the clinical material proved insufficient, as for instance at the present time in psychiatry, tuberculosis and infectious diseases.

"If the student is to have a complete picture of a disease, and of more importance, if the patient is to be properly cared for, a longer stay in the hospital should be planned than is now the custom in most of the New York hospitals. The demand for beds is so great that patients are often discharged as soon as they are able to stand the trip home and before they are really able to resume their home duties.

"This should be arranged for by providing good convalescent facilities, a good 'follow-up system' and by a more generous supply of beds. To satisfy these conditions there should be 200 beds for medicine, 200 for surgery and 250 for other specialties.

"It is hoped that later on special hospitals, such as the Sloane Hospital for Women, may be obtained adjacent to the University Hospital for each of the specialties. It is also hoped that the Vanderbilt Clinic will be moved with the school and built on such a scale as to include the outpatient function of that hospital.

COURSES OF ONE AND TWO YEARS.

"With the development of these special institutes it will be possible to carry on advanced work along the various branches which will furnish facilities for graduate courses in medicine one and two years in length, as well as

*Taken from N. Y. Times, of Sunday, May 22, 1921.

larger opportunities for advanced students to become thoroughly competent in special branches of medicine and surgery. It is also hoped that graduate work may also be carried on in the various hospitals at present affiliated with the College of Physicians and Surgeons, which will enable the University to more completely satisfy the demands for instruction and will not limit the usefulness of the school to those who are studying for the M. D. degree."

The student body of the Medical School will be limited in numbers.

The Faculty considers very thoroughly the merits of the various so-called full-time plans for the personnel of the new organization of school and hospital, recommending the adoption of the plan which provides for private practice at the discretion of the clinician with no fee being paid for such service. This plan is in effect at the Rockefeller Hospital.

"The heads of many of the laboratories have long been on the full-time basis and with no legislation they have voluntarily refrained from any outside employment. The results in the advancement of knowledge have proved the value of such an arrangement," the statement continues.

"The main clinical departments shall be reorganized on the full-time basis—medicine and surgery immediately and pediatrics as soon as financial and clinical facilities permit," the statement says. "It is hoped that other departments may later be similarly arranged.

"At the head of each shall be placed a man of such training, ability and character that he may assume full responsibility for and the direction of the general policies of the department, the character of the teaching, the hospital service and the nomination of his associates. It shall be his duty to develop a modern clinic of the best type."

"The adoption of the full-time or university basis is necessary, it is said, for the best type of teaching, for the most successful clinical investigation and for the most skillful care of the sick. The essential principle of this arrangement is that the dominating group of men in the main clinical departments must be free to concentrate their energies on their university and hospital work. Although widely divergent plans of organization are now in force or planned throughout the country, the Columbia view is that there is apparently but

little question in the minds of medical educators as to the wisdom and necessity of this main principle. The main purpose is to obtain a more truly university type of clinical teacher.

"The fundamental principle upon which these departments shall be reorganized is that the control of each main clinical department shall be vested in a director, associated with a differentiated group of men who are devoting all their time to the school and hospital, that they may build up and maintain a department where the best intensive clinical investigation and scientific research may be carried on with the teaching of students and the care of the sick."

News Notes

Medical College Finals.

Commencement exercises of the MEDICAL COLLEGE OF VIRGINIA began with the baccalaureate sermon on May 29, by Dr. Broughton, of Grove Avenue Baptist Church, his subject being, "The Doctor and the Community—His Making and Unmaking." At the meeting of the Board of Visitors on the 30th, for the selection of the faculty for the coming year, all changes were of minor importance except in the case of the resignation of Dr. Margaret Hoskins as associate professor of anatomy. On Monday and Tuesday, the usual clinics and meetings of the alumni were held and a smoker was enjoyed by members of the Alumni Association on Monday evening.

The meeting of the alumni on Tuesday morning was largely attended by visitors as well as local men, and the following officers were elected: President, Dr. H. U. Stephenson, Toano; Vice-Presidents, Dr. Harry Bear and Mr. L. C. Bird, of Richmond, and Drs. Elisha Barksdale, Lynchburg, and Prentiss D. Johnston, Tazewell; Secretary, Dr. Greer Baughman, Richmond; Assistant Secretary, Mr. A. L. I. Winne, Richmond; and Registrar, Dr. Clyde F. Ross, Richmond.

At the final exercises on the evening of the 31st, Dr. F. W. Boatwright, president of the University of Richmond, was the orator. Following this, diplomas were presented to thirty graduates in medicine, thirty-four in pharmacy, thirteen in dentistry, and thirteen young women graduates of the School of Nursing of

the Medical College of Virginia. Following the exercises, a reception was tendered the nursing class at Westmoreland Club, by the hospital division of the college.

The following hospital announcements have already been made:—

Johnston-Willis Sanatorium, Richmond.—Dr. Wm. B. McCutchen, Rougemont.

Memorial and St. Philip's Hospitals, Richmond.—Dr. Henry J. Langston, Richmond.

St. Luke's Hospital, Richmond.—Drs. Charles M. Irvin, Roanoke, and Herman I. Pifer, Strasburg.

Retreat for Sick, Richmond.—Drs. Thos. B. Pearman, Jr., and Allan M. Kimbrough, both of Richmond.

Stuart Circle Hospital, Richmond.—Drs. Robt. F. Gillespie, Pounding Mill; John K. Shumate, Pearisburg, and Geo. R. Maloney, Cullen.

Soldiers' Home Hospital, Richmond.—Joseph Coates (undergraduate).

St. Elizabeth's Hospital, Richmond.—Drs. R. Hugh Wood, Floyd; O. O. Ashworth, Richmond.

Tucker Sanatorium, Richmond.—Dr. Thos. D. Davis, Paces.

Virginia Hospital, Richmond.—Drs. Carlisle C. Cochran, Huntersville, N. C.; W. Herman Whitmore, Emporia.

Roanoke Hospital, Roanoke, Va.—Dr. Ira T. Hornbarger, Healing Springs.

Grace Hospital, New Haven, Conn.—Dr. C. W. Putney, Darlington Heights.

Walter Reed Hospital, Washington, D. C.—Drs. Harry Lee Claud, Drewryville, and Francisco J. Casaldue, Porto Rico.

Other graduates of the Medical Department are: Drs. Francis M. Aycock, Lucama, N. C.; Arthur B. Carr, Athens, W. Va.; Roger L. Creekmur, Gilmerton; John M. Davis, Paces; Rob Roy Doss, Drakes Branch; Francis E. Hinchman, Richmond; John K. Richardson, Crewe; Paul A. Robertson, Blackstone; Elmer N. Shockley, Sylvatus; Jos. E. Smith, Wilson, N. C.; Alpheus L. Stratford, Jr., Richmond, and Harry A. Wall, Norfolk.

this was the most brilliant of the exercises ever held at the University and many alumni and others of eminence, including representatives from foreign countries, were in attendance and participated in the ceremonies. About 5,000 alumni were in attendance and fifty-five classes of University graduates were represented. This year there was unveiled a memorial tablet in honor of the University of Virginia men who died in the World War. This bore eighty names, a number of whom were graduates of the Medical Department.

There were twenty graduates in the School of Medicine this year and all of these, with the exception of one who was recently married, received hospital appointments. The full list of graduates with appointments follows:—

University of Va. Hospital, University.—Drs. Robt. M. Page, Batesville, and Patton K. Pierce, Ralph, Ala.

Walter Reed Hospital, Washington, D. C.—Drs. William R. Morris and Jos. H. Smith, both of Charlottesville, and Millard B. Savage, Norfolk.

Wesley Long Hospital, Greensboro, N. C.—Dr. Ernest H. Alderman, Greensboro, N. C.

Orange Memorial Hospital, Orange, N. J.—Dr. Carl Bishop, Riner, and Edgar M. Tennis, Phoebus.

N. Y. Nursery and Child's Hospital, New York City.—Dr. Harold C. Cox, Brooklyn, N. Y.

King's County Hospital, Brooklyn, N. Y.—Drs. Frank L. Foster, University, and Wm. I. Prichard, Petersburg.

Charity Hospital, New Orleans.—Dr. Frank A. Fox, Greenville, Tenn.

Boston City Hospital, Boston, Mass.—Dr. John S. Lawrence, South Norfolk.

St. Mary's Hospital, Passaic, N. J.—Dr. L. Lebel, Nutley, N. J.

Postgraduate Hospital, New York City.—Drs. Jas. O. Porter, Lynchburg, and R. L. Willis, Chatham.

Ellis Island Hospital, New York.—Dr. C. L. Quaintance, Griffinsburg.

Mass. General Hospital, Boston, Mass.—Dr. James E. Wood, Jr., Charlottesville.

Assistant Pathologist, University of Virginia.—Dr. Wm. M. Sheppe, Charlottesville.

Appointment declined at this time.—Dr. C. Tunstall, Norfolk.

The MEDICAL DEPARTMENT OF THE UNIVERSITY OF VIRGINIA held its finals, as usual, in connection with those of other departments of the University. Being the centennial celebration,

Lynchburg Meeting, Medical Society of Virginia.

The fifty-second annual meeting of the Medical Society of Virginia will be held in Lynchburg, October 18 to 21, inclusive. This will be the fifth time in the history of the society that the annual meeting has been held in that city and, as on former occasions, this promises to be of unusual interest and pleasure.

According to the nature of information desired, communications should be addressed to the president, Dr. A. L. Gray, Richmond; secretary-treasurer, Mr. G. H. Winfrey, 1041½ West Grace Street, Richmond, or Dr. George J. Tompkins, chairman of the local committee of arrangements, Lynchburg. Chairmen of sub-committees already appointed are:—Exhibits, Dr. Hunter B. Spencer; meeting place, equipment and accommodation of members, Dr. F. O. Plunkett; entertainment of members, Dr. John W. Carroll; finance, Dr. James Morrison; entertainment of visiting ladies, Mrs. Robert M. Taliaferro.

Before starting on your summer vacation, let us have title of paper you will present at this meeting. Cards will be mailed during the summer, as usual, but yours may reach your office while you are away and be overlooked. Get this off your mind by sending us your title Now.

High Maternal and Infant Mortality.

In the United States in 1919, one mother died for every 135 babies born, and every eleventh baby died before it was a year old. These rates are excessive as compared with those of other countries. Six countries are shown to have a lower infant mortality and 16, in a group of 17, a lower maternal mortality than the United States. Not only is our maternal mortality rate higher than that of most representative countries but it seems to be increasing.

Measures which have proved successful in preventing this waste of life among mothers and babies include: Prompt and accurate birth registration, health centers, public health nurses, special clinics, trained attendants at childbirth, adequate hospital service, education of the mother in maternity and child hygiene, and education of the general public in the significance of a necessity for maternal and infant health.

Married—

Dr. James Morrison Hutcheson and Miss Margaret Erskine Miller, both of Richmond, June 11.

Dr. James Fairfax Fulton, of Staunton, Va., and Miss Martha Alexander Bell, of Lewisburg, W. Va., June 18.

Dr. John S. Weitzel and Miss Marie H. Woods, both of this city, May 18.

Dr. John Lewis Rawls and Miss Azzie Jueldah Gatling, both of Suffolk, Va., June 2.

Federal Aid Should be Continued to States in Venereal Disease Work.

Since the signing of the armistice, State Boards of Health, assisted by the U. S. Public Health Service, have established in dispensaries and hospitals more than 400 clinics for the free treatment of persons afflicted with venereal diseases (gonorrhea and syphilis). These clinics were established in pursuance of the national educational and medical program for controlling these diseases, which had become a very serious menace to the health of the nation. To aid in the work, the Federal Government appropriated more than two and a half million dollars to be allotted to the States on a fifty-fifty basis; and now every State in the Union has accepted the offer.

At the clinics, diseased persons receive, free of charge or at small expense, the best modern treatment that money and science can provide, and arsphenamine (606) and other expensive drugs are provided for patients who are unable to pay for them. Without this help many infected persons would never be treated; with it thousands have been cured and many thousands of walking sources of infection have been removed. In the last two years more than 200,000 persons were treated in these clinics; and in 1920 alone a million and a half treatments were given.

The last Congress, however, failed to continue the co-operative appropriation and, unless the present Congress comes speedily to the rescue, Federal aid to the States must cease soon after June 30. Industries as well as individuals will suffer from the withdrawal of this appropriation.

Appointments on State Board of Health.

Dr. E. Howe Miller, Danville, Va., has been appointed a member of the Virginia State

Board of Health, for a term of four years beginning July 1, 1920.

Dr. Guy R. Harrison, Richmond, was re-appointed a member for a term of four years, and an innovation was made by appointing a woman, Mrs. Charles Hall Davis, of Petersburg, a member, her term of office being for four years, beginning June 17, 1920.

T. B. Sanitorium Site Bought.

A ten-acre tract of land, a quarter of a mile from the North Danville limits, has been secured from Dr. L. L. Vann, as the site for the new home of the Danville, Va., tuberculosis sanitorium. The buildings will shortly be erected at a cost of approximately \$50,000, which sum was recently raised by popular subscription.

Dr. William P. Colvin,

Formerly of New York City, but who has been assistant health officer of Danville, Va., for the past three months, left the first of this month for New York City, from which place he and his wife expected to sail on the 11th of June for Ecuador, where he goes to take up health work.

Dr. C. B. Bowyer,

Of Stonega, Va., was a recent visitor in this city, having come on professional business. From here, he went to Boston, to attend the meeting of the A. M. A.

Dr. Thos. J. Tuder,

Keokee, Va., was among the Virginian doctors who recently attended the meeting of the Southern Railway Surgeons' Association in Mobile, Ala.

Dr. Myer Solis-Cohen

Has been appointed assistant professor of internal medicine in the graduate school of medicine, University of Pennsylvania, of which he is an alumnus.

Trustees of Crippled Children's Hospital.

The following doctors are members of the board of trustees of the Crippled Children's Hospital, Richmond:—Dr. L. T. Royster, Norfolk, and Drs. McGuire Newton, Wm. T. Graham, Ennon G. Williams and Stuart McGuire, Richmond.

The American Public Health Association,

On May 1, 1921, removed its offices from Boston to New York, in order to promote closer cooperation with other national health agencies. It is to be one of the agencies composing

the National Health Council. A national headquarters office of the Council has been established at 411 Eighteenth Street, Northwest, Washington, D. C., in addition to its co-operative office in New York City. Dr. Livingston Farrand is chairman of the Council, and Dr. C. St. Clair Drake, secretary.

Dr. Karl S. Blackwell,

Of this city, was elected vice-president of the Richmond Chapter of the Randolph Macon Alumni Association, recently reorganized here.

Dr. R. M. Taliaferro,

Lynchburg, Va., was a recent visitor in this city.

Dr. Robert C. Randolph,

Of Boyce, Va., enjoyed a visit to Atlantic City, N. J., in May.

X-Ray Scientists Awarded Gold Medals.

The French Commission, endowed by the Carnegie Foundation, has awarded three gold medals to Dr. Charles Infroit, Dr. Adolphe LeRay, and Dr. Vaillant, head of the Salpetriere Radiogram Laboratory, who is also given 50,000 francs. These were given in recognition of the investigations with the x-ray by these scientists. Drs. Infroit and LeRay both recently died as a result of their x-ray research work. Dr. Vaillant has suffered ten amputations in ten years, losing fingers, then a hand, and finally his left arm. However, he is still experimenting.

Dr. R. D. Tucker,

Of Powhatan, Va., was among those attending the Rural Health Conference which was held in Richmond in May.

Dr. and Mrs. A. R. Shands,

Washington, D. C., have been recent visitors at Dr. Shands' old home place in Prince George County, Virginia.

The New Hospital,

In Hopewell, Va., which is to be conducted by Drs. D. L. and J. N. Elder, of that city, and Dr. H. Aulick Burke, of Petersburg, Va., was opened early this month.

Ambulance for Winchester Hospital.

A new motor ambulance, costing approximately \$3,000, has been presented to the Winchester, Va., Memorial Hospital, by residents of that city and Clarke and Frederick Counties. The money for this was raised as the result of a popular and voluntary offering. To

this time, the hospital has had a horse drawn ambulance.

Public Health Service and Nervous-Mental Diseases.

Medical officers have been detailed by the U. S. Public Health Service to visit the medical colleges of the United States to recruit personnel, especially internes, for the care of nervous-mental patients in Service Hospitals. Dr. J. K. Fuller, who has been directing the clinical work at St. Elizabeth's Hospital in Washington, is visiting southern and western colleges, and Dr. T. J. Heldt, clinical director of the Service Hospital at Waukesha, Mich., is visiting those in the north and middle west.

The American Social Hygiene Association.

Announces that its offices have been changed from 105 West 40th Street to 15th floor, 370 Seventh Avenue, New York City.

Dr. Tcm A. Williams,

Washington, D. C., is to give two lectures on "Mental Hygiene" and "Emotion and Fitness" before the General Assembly of the University of Virginia early in July.

Dr. Alfred S. Gruessner,

Of the class of '18, Medical College of Virginia, recently of Cradock, Va., has moved to New Brunswick, New Jersey.

Dr. Chas J. Sager

And a cousin, of Thomas, W. Va., received painful and what came near proving serious injuries, when on a recent automobile trip to visit relatives in Woodstock, Va. The accident occurred about 2:30 a. m., on the Winchester-Martinsburg Pike, where a cable, which was about five-eighths of an inch thick, had been stretched across the road where improvements were being made to the roadway. There were no lights to indicate the cable and they ran into it, ripping off the hood of the car. Both men were caught under their chins and Dr. Sager was severely bruised and was rendered unconscious for a time. His cousin's throat was lacerated to such an extent that about a dozen stitches had to be taken. A somewhat similar accident occurred near the same place a short time previous to this.

Candidates for Legislature.

Two Virginia doctors whose names have recently been announced as candidates for the House of Delegates are Drs. J. Fulmer Bright, of Richmond, and Dr. W. T. Swanson, of Calhoun, Pittsylvania County.

Stuart Circle Hospital Has Opened Addition to Building.

The new addition to Stuart Circle Hospital, Richmond, which has been in process of construction for nearly a year, was opened on the 6th. It has facilities for the accommodation of between forty and fifty patients, making the total capacity of the hospital more than 150. This addition contains offices, rooms for patients, library, amusement rooms for patients and many other conveniences to be found in only the most up-to-date hospitals.

China to Adopt U. S. Pharmacopoeia.

It was recently announced by the Philadelphia College of Pharmacy and Science that the U. S. Pharmacopoeia is being translated into the Chinese language for use in that country. It is understood that, before the war, Germany made an effort to have its Pharmacopoeia adopted and that Great Britain has been trying to have hers introduced since that time, which demonstrates the merit of our own that it has proved acceptable.

Dearth of Doctors in Rural West Virginia.

We note from a recent communication that West Virginia is having some of the same trials and tribulations as Virginia and other States, with regard to supplying its rural communities with doctors. It is stated that the cities of the State are well supplied while in some of the counties people live 15 to 20 miles from the nearest physician.

At the Rural Health Conference, recently held in Richmond, in the discussion of the subject of the need of doctors in rural communities, attention was called to the fact that New Zealand is solving this problem by subsidizing doctors for the country districts.

Madame Curie's Visit a Reality.

Mme. Curie, famous woman scientist and co-discoverer of radium, reached this country May 11, as scheduled, and has been much "feted and toasted" since. She has been the recipient of several medals and honorary degrees and, on May 20, at the White House, in Washington, President Harding presented her with a phial containing a gram of radium, valued at \$100,000. This was bought with money raised by American women by popular subscription, that the radium might be used by Mme. Curie in the fight against cancer and other diseases. The intellectual grasp of the woman was illustrated by her reply to Presi-

dent Harding's presentation speech, her thanks being made in an address of perfect diction. Madame Curie was born in Poland but is now a resident of France.

Mme. Curie's First American Contribution.

The July issue of the *Medical Review of Reviews* will contain a lengthy original contribution by Mme. Curie entitled "The Radio Elements and their Applications." A copy of the July issue containing it will be sent gratis to any physician making the request.

Address the *Medical Review of Reviews*, 51 East 59th Street, New York City.

The Second International Congress of Eugenics

Is to be held in New York City, September 22-28, 1921. Memberships are of two kinds—sustaining and active. Detailed information about these, as well as other matters, may be received from Dr. C. C. Little, Secretary-General, American Museum of Natural History, 77th Street and Central Park West, New York City.

Dr. William L. Gannaway,

Recently of Mendota, Va., is now located at Abingdon, Va.

Dr. W. Paul Spears,

Hickory, N. C., of the class of '11, of the former University College of Medicine, of this city, has been elected secretary-treasurer of the Caldwell-Catawba-Lincoln County (N. C.) Medical Society recently organized at Hickory.

Dr. James A. Hayne,

Columbia, S. C., has been elected president of the S. C. Public Health Association, which was organized at the annual meeting of the State Association in Columbia, in April.

T. B. Clinics Popular.

The Virginia Tuberculosis Association and State Board of Health report that in about seven weeks following April 1, 1921, 1,754 patients were examined in this State for tuberculosis. Many of the counties are clamoring for these clinics which in some cases will be the first move toward the establishment of local sanatoria. In some counties, very little open tuberculosis is shown while in others a large percentage of infection may be found.

Dr. Walter J. Miller,

Johnson City, Tenn., was recently selected president of the Tennessee State Board of Health.

Dr. U. G. Jones,

Who has been doing post-graduate work at the Manhattan Eye, Ear and Throat Hospital, New York City, for several months, will complete the course and return to his home in Marion, Va., about the first of July.

Dr. G. G. Howery,

Until recently of Riner, Va., is now located at East Radford, Va.

Dr. and Mrs. Frank Redwood

And children, of Norfolk, Va., have been recent visitors in this city.

Gets Points From Vital Statistics Bureau.

Following the lead of many of the Southern States, Dr. Carl F. Raver, chief statistician of the Bureau of Vital Statistics of the State of West Virginia, visited Richmond in May, to go over the workings of the Virginia Bureau of Vital Statistics and get pointers for his own office, which has only recently been established.

Dr. Alexander G. Brown, Jr.,

Of this city, was elected surgeon and a member of the council of the Society of Colonial Wars in the State of Virginia, at its recent meeting held here.

Scientists May Secure Copies of Scientific Articles.

Many scientists lack the library facilities which their work demands and are compelled to journey to distant libraries or to try to borrow books by mail. Often it is difficult for them to locate something that is badly needed, and again it may be impossible to borrow it.

The Research Information Service of the National Research Council is prepared to assist investigators by locating scientific publications which are not generally or readily accessible. It will also, as is desired, have manuscripts, printed matter or illustrations copied by photostat or typewriter. The cost of copying varies from ten to twenty-five cents per page. No charge is made for this service unless an advance estimate of cost has been submitted and approved by correspondent. Requests for assistance should be addressed, National Research Council, Information Service, 1701 Massachusetts Avenue, Washington, D. C.

Members of National Economic League.

Among the prominent Virginians appointed to membership in the National Economic League of Boston are Drs. Joseph S. DeJarnette, Staunton, and J. Shelton Horsley, Richmond.

Memorial to Dr. Battey.

In May, a monument was unveiled in Rome, Ga., to the memory of the late Dr. Robert Battey, of that city. The monument was given to the city by the Seventh District Medical Society of Georgia and the chief address, upon its presentation, was made by Dr. Howard A. Kelly, of Baltimore. Dr. Battey's fame dates back to 1872, at which time he originated and first performed Battey's operation for oophorectomy.

Dr. John W. H. Pollard,

Who is in charge of athletic work at Washington and Lee University, Lexington, Va., is spending the summer at Quincy, Ill.

Virginia Graduates in Florida.

Attesting the popularity of Florida as a location for Virginia graduates, we have recently heard of several Medical College of Virginia graduates who have located in Florida and are doing well:—Drs. S. E. Wilhoit, of the class of '14, at Quincy; J. J. Spencer, of the class of '17, in St. Augustine, and R. M. Baker, of class of '18, in Jacksonville. Also, Dr. R. O. Lyell, formerly of Warsaw, Va., is now engaged in surgical work in Miami.

The Lancet,

Founded in 1823 and issued weekly at an annual subscription price of \$12.00, will hereafter be published by the Oxford University Press. Subscriptions to be mailed to American addresses should be sent to the Oxford University Press, 35 West 32nd Street, New York, but editorial communications should be sent to Oxford University Press, Amen Corner, London, E. C., England.

Lectures and Clinics on Speech Correction and Development.

A one or two months' lecture course with clinics will be given at the Northwestern University, Evanston, Ill., this summer. The first course will begin June 27 and the second on July 25. The fee is \$50 a month, in advance. Detailed information may be obtained from W. B. Swift, M. D., 110 Bay State Road, Boston, Mass.

Dr. Aubrey C. Belcher,

Of Ft. Smith, Ark., has been a recent visitor at his former home in this city.

Have You Gotten Your Victory Medal?

This is a beautiful medal which is to be awarded by the U. S. Government to all men

and nurses who served honorably in the United States Army during the World War. You need not have gone abroad to be eligible.

Any ex-service man or woman, or mother or father who lost a son in service, is entitled to this token. Bring or mail your discharge at once to Victory Medal Office, 1112 Capitol Street, Richmond, Va., or your nearest American Legion Post, American Red Cross, or pastor, will be glad to give you information.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for reconstruction aide, applications to be rated as received until further notice; and for positions of roentgenologist; associate roentgenologist; assistant roentgenologist, and junior roentgenologist, applications to be rated as received until August 1.

Both examinations are open to men and women, citizens of the United States, appointing officers to have legal right to specify sex desired in requesting certification of eligibles.

For details as to above requirements for either examination, communicate with the above named Commission.

For Sale.—

My property and practice in a thriving town in the Valley of Virginia. Good roads, schools, churches and railroad facilities. Property consists of twenty-two acres of improved limestone land set in apples. This joins my town property of three acres on which is located colonial brick house and all necessary buildings. Good practice. 95% collections. A money maker for the right party who is willing to tackle a good thing. Address all replies to "X. Y. Z.," care this journal.—(Adv.)

Wanted—

To buy an improved Virginia farm of from 50 to 100 acres, preferably located in Valley of Virginia, good roads, close to good schools, etc., and near a thriving town that would make a good location for a doctor in active practice, age 40. Address communications to "S," care this journal.—(Adv.)

Position Wanted

In doctor's office, by undergraduate nurse, with knowledge of chemistry and stenography. Willing to start on meagre salary. Address, "M. J. C.," care this journal.—(Adv.)

Obituary Record

Dr. Allen D. Evans,

Of Christiansburg, Va., one of the most prominent physicians of the southwestern section of the State, died suddenly May 17, while returning from a visit to one of his patients. Dr. Evans was fifty-two years of age and a graduate in medicine from the University of Virginia in 1904. Since then, he had made his home in and practised at Christiansburg. He was a member of the Southwestern Virginia Medical Society and the Medical Society of Virginia. He is survived by his wife and two daughters.

THE PASSING OF A PHYSICIAN.

As we drove up the main street of the town and lighted at the courthouse door, the crowd on the streets made one think that it might be court week. Every hitching-post was taken, and automobiles of every description lined the curbing, and yet there was an air of quiet and stillness hovering over all, that betokened something more unusual than court week.

The look of sadness on the passing faces told, plainer than words, that death had entered the village and carried away someone beloved of all; and when we offered to pay the colored driver of the car that had brought us over from the station, a mile away, and he refused pay, saying, "I am doing this for the Doctor," we knew that a great man had passed, and that the people who thronged the streets were paying silent tribute to his memory.

The village church was crowded to its capacity and even in the church yard standing-room was at a premium. In the side galleries of the church, where space had been reserved for colored people, every seat was taken and, looking around on the congregation composed of white and black, one's mind harked back to the days before the sixties, and a congregation of Tender Memories kept tryst with our hearts and souls.

It is a commonly expressed sentiment nowadays that the old time bond between a people and their doctor no longer exists, but anyone who attended the funeral of Dr. A. D. Evans, of Christiansburg, knows that this sentiment is false, and that true worth and self sacrifice still bear the fruits of love and affection.

G. M. M.

Dr. William James Cowardin

Died at his home in this city, May 11, after an illness of several months. He was forty-four years of age and a graduate in medicine and dentistry of the former University College of Medicine, this city. He practised dentistry in this city for over twenty years and was considered one of the ablest men in his profession. He was, for a time, connected with the dental faculty of the Medical College of Virginia. His wife, three children, and a large family connection survive him.

Dr. Cowardin was a member of the Rich-

mond Academy of Medicine and Surgery and of the Medical Society of Virginia. At a called meeting of the Academy on May 12, the following preamble and resolutions were unanimously adopted:—

The Richmond Academy of Medicine and Surgery learns with sincerest grief of the death of one of its Fellows, Dr. William J. Cowardin. He had been in ill-health for several years, though he had relinquished his practice for but a few weeks. Though Dr. Cowardin was a graduate both in medicine and dentistry, his talents leaned toward the latter and he practised this specialty. His ability and skill ranked him amongst the foremost dentists of the city, bringing him a large practice and making friends and admirers of his patients. Though he never practised medicine, he manifested great interest therein, attending the meetings of the medical societies and constantly reading medical literature. Therefore, be it resolved,

First, That in the death of Dr. William J. Cowardin the Academy has lost a highly respected and successful practitioner.

Second, That the sympathy of this body be conveyed to his beloved wife and children.

Third, That these resolutions be spread upon the pages of the minutes of the Academy; that a copy be sent the family, and that they be published in the Virginia Medical Monthly.

(Signed) G. CHAMBERS WOODSON,
WM. S. GORDON,
RAMON D. GARCIN,

Committee.

Dr. Jesse P. Rex,

Died at his home in this city, May 21. He was forty-three years of age and a graduate in medicine from the Medical College of Virginia in 1903. His mother, a sister and two brothers survive him.

Dr. Simon Baruch,

One of the best known authorities on hydrotherapy in this country, died at his home in New York City, June 3, after a long illness. He was born in Germany 81 years ago and, after completing his academic education at the Royal Gymnasium of Posen, came to America. Here he studied medicine at the Medical College of Virginia, Richmond, from which he graduated in 1862. After this he joined the Confederate Army and served as a surgeon in the field, where he had many and varied experiences. At the close of the war, he located in Camden, S. C., where he remained until 1881 when he moved to New York. He was an ex-president of the S. C. State Medical Association and was also at one time connected with the State Board of Health of that State. Later, he was professor of hydrotherapy at the College of Physicians and Surgeons, New York. Many of his writings on this subject have been translated into French and German.

Fifty-second Annual Session, Lynchburg, Va., October 18-21, 1921

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Original Communications

CONCERNING SOME OF THE OCULAR INTERPRETATIONS OF DISORDERS OF THE PITUITARY BODY AND THEIR NON-SURGICAL TREAT- MENT.*

By G. E. De SCHWEINITZ, M. D., Philadelphia, Pa.

The ocular interpretations of pituitary body disorders, to wit, the visual disturbances, whether there is excessive activity of the glandular epithelium (hyperpituitarism), or diminished function of the anterior lobe (hypopituitarism), represent the most common neighborhood signs of hypophyseal lesions. The visual phenomena are usually classified as follows:

1. Impairment of acuteness of vision; (2) lesions of the intraocular optic nerve apparatus; (3) alterations of the visual field, and (4) anomalies of ocular motility. Such ocular symptoms as visual hallucinations, chromatopsia, photophobia, exophthalmos, palpebral pigmentation and glandular hypertrophy may be dismissed in passing mention.

IMPAIRMENT OF VISION, naturally, may vary from blurred sight to complete blindness, according to the degree of disturbed function of the optic pathways which is present, and depends, in largest measure, upon degrees of compression of the chiasm, tracts, and optic nerves, but does not bear any close relation to the size of the sella (Cushing). For instance, in acromegaly, the size of the sella may be conspicuous, but the evidence of poor vision entirely lacking.

To one manifestation of disturbed vision I desire again to call attention, and shall quote from a previous communication on the subject. There is a form of blurred vision, of which the patient is definitely conscious, which antedates by a long period of time the amblyopia which is associated with ophthalmoscopic nervehead

changes, or any form of scotoma, or any visual field defect (searched for by the usual methods), or any failure to read normally the ordinary test types. This period of time may last for months, even for years; in one patient it continued for almost two years before change in the color of the disc was noticeable. Doubtless, careful estimation of the light sense would reveal that it is deficient, just as it is in chronic glaucoma long before the conspicuous symptoms of the disease are present. It is a symptom difficult to describe. In an attempt at description one patient expressed herself thus:—"Yes, I can see and read the letters which I ought to see and read, but I see them as if I was in a brown study." How frequent this phenomenon is I do not know; it readily may escape detection. Evidently, it interprets a beginning physiologic block to light impulses; indeed, the later primary atrophy of the optic nerve represents a more or less complete similar block, but not a destruction of the nerve fibers in those patients whose sight is restored by operation or organotherapy. The importance of further study of this condition is evident. It is not too much to say that, in the presence of otherwise unexplained, long-continued visual disturbances, investigation of the hypophyseal region is in order.

OPTIC NERVE-HEAD CHANGES. Although Uht-hoff records about 9 per cent of choked disc and an almost equal percentage of optic neuritis in pituitary body disease, it may be said that primary disc edema or neuritis is, as compared with so-called simple atrophy of the nerve-head, comparatively uncommon. In a rather large experience I have noted in only three instances what I assume was a primary choked disc. Naturally, should the hypophysis tumor so increase in size that decided elevation in the general cerebral pressure follows, papilledema may be implanted on an atrophic or pallid nerve, but this is not primary choked disc.

Briefly, if in pituitary body disease the

*Read by invitation at the first meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, in Richmond, February 3, 1921.

ophthalmoscopic signs are not negative, they usually are those of simple atrophy with certain modifications. Pallid discs in the presence of almost and sometimes complete blindness may regain function after operation or organotherapy; in other words, this so-called primary atrophy may represent, as before stated, a more or less complete physiologic block to light impulse, and not a destruction of the nerve fibers. Ultimately, pressure being unrelieved, a real atrophy may supervene, precluding the possibility of restoration of vision. But I have seen blindness, that is, no light perception, lasting for six weeks, followed by complete restoration of vision to the standard type as the result of non-surgical treatment. While it may be too much to say that the ophthalmoscopic appearances of the nerve-head are ever actually characteristic of hypophysis disease, they are often significant in that the disc has a somewhat waxy pallor, with a suggestion of yellow, and later the spaces of the lamina are often conspicuous, and in some instances the disc resembles that seen in methyl alcohol blindness.

SUMMARY. Therefore, from the direct visual standpoint, we have as salient signs: Often an early indistinct vision, or ill-defined blur, without ophthalmoscopic change, probably interpreting the earliest stage of physiologic blocking of light impulses; later on, with or without such antecedent blurred vision, nerve-head pallor, which at first and for a long time may continue to represent a condition of blocking of light impulses, and not a destruction of nerve fibers, and the nerve function may entirely be restored by operative or therapeutic measures; finally, pressure not being relieved, the pallor indicates nerve destruction and permanent blindness, or great depreciation of vision—the pallor is usually somewhat waxy in appearance, with a suggestion of yellowish tint.

VISUAL FIELD PHENOMENA. The common development of bitemporal hemianopsia as the result of chiasmal pressure is so conspicuous that the diagnosis of pituitary body disease is sometimes deferred or not made if homonymous lateral hemianopsia is present, and yet this defect is not a very infrequent phenomenon, depending, of course, upon the type and place of pressure.

Omitting, however, further reference to this type of field defect, it is probable that bitemporal hemianopsia, which when present is cer-

tainly the most typical ocular symptom, occurs in fully 50 per cent of patients with hypophysis lesions and disease of the infundibulum, with or without acromegaly.

The gradual development of temporal hemianopsia is illustrated in this diagram (after Cushing), beginning with the so-called "temporal slant," and early indentation of the color lines until the temporal half of the field is lost, but the macular representation still remains. Later, this is encroached upon, and only a part of the nasal field lingers, which finally disappears when blindness is complete. In spite of what the books say, the boundary line is hardly ever regular or vertical. In Cushing's series, typical bitemporal hemianopsia with a vertical meridian which bisects the macula was conspicuously rare, an observation which is confirmed by Evans in his well-known article, and certainly I have rarely seen it in the many fields which have been charted by myself and by members of my staff. It must not be inferred from what I have said in regard to the sharpness of the boundary between the seeing and the blind field that a typical vertical meridian which bisects the macula does not occur. It is only that one does not often have the opportunity of making the examination when, to use a modern expression, "the field lingers" with this shape for a long period of time.

Although it is usually stated, and in general terms correctly, that the defect for colors precedes that for form and white, it is now well known that if modern methods of perimetry are employed—the Bjerrum method, the tangent screen of Duane, the campimeter, etc.—the uncertainty which always surrounds perimetry with colored objects is obviated, and we can get just as good and accurate results with white objects sufficiently small.

Scotomas. Although I have briefly outlined the evolution of temporal hemianopsia from the earliest temporal slant to complete disappearance of the nasal field, if one wishes to be exact in this business a careful search for scotomas, often antedating large field defects, must be made. These scotomas have in some measure the same relationship to typical field deficiency, generally temporal, as does the faint early blur of which I have spoken to the later grave degradation of visual acuteness.

It is not possible to arrange an accurate classification of these scotomas, partly because of the variations to which the visual fields of

patients with pituitary body disease are subject. Indeed, the alterations in the visual fields in these circumstances (and now I mean not alone the scotomas, but the entire fields), is a characteristic phenomenon, and has been commented upon. They vary not only from day to day, but sometimes in different portions of the same day, the variations naturally depending upon alterations in the pressure exercised by the struma, cyst, or growth.

Referring to the scotomas particularly, however, it may be said in general terms that they usually are small at first, para-central, and later may expand into larger, bitemporal hemianopic defects, in their turn the forerunners of complete hemianopsias. Rarely a binasal hemianopic defect is discovered, or the scotoma may be situated up and out from the fixing point, or less frequently, cap the fixing point, that is, be situated directly above it, but also continuous with it. Aberrant scotomas, that is, those which develop some distance from the fixing point, in the center of either of the lateral fields, are also occasionally observable, that is, there are dark islands in an otherwise preserved field. In like manner and in contrast to this, we may sometimes find a light island in the center of an otherwise dark field, and the finding of such an island, sometimes discoverable only by using as a test object a small electric light, enables us to judge the character of the original field defects, that is, whether there was a bitemporal hemianopsia, or a homonymous lateral hemianopsia.

It would be interesting, taking Wilbrand and Saenger's plan of the distribution of the fibers in the optic chiasm as a guide, to attempt to place the probable situation of the lesion which these scotomas interpret, but in large measure such an attempt would be a piece of guess work, except in a few instances. Thus, in all probability bitemporal hemianopic scotomas could be explained by assuming that a circumscribed focus of disease proceeding from the floor of the recessus to the surface of the posterior portion of the chiasm, meets the crossed fibers of the papillomacular bundle and produces this visual-field defect. On the other hand, should the lesion extend symmetrically on both sides of the posterior upper surface of the chiasm, the uncrossed fibers of the papillomacular bundle would be affected and binasal hemianopic scotomas would result. In other scotomas which later are elaborated into large

bitemporal hemianopic scotomas, and ultimately into a complete bitemporal hemianopsia, apparently the lesion would first involve the crossed bundle and the crossed papillomacular bundle in their inferior portion. As Bartels points out, it may happen that although the visual disturbances may depend on the presence of a central scotoma, no clear explanation for its presence is demonstrable at autopsy. Undoubtedly, vascular constrictions are responsible for some of these defects.

SUMMARY. Although bitemporal hemianopsia is a characteristic field phenomenon, indicating chiasmal pressure, it is not necessary that a hypophyseal tumor shall be interpreted by such a field, because the neighborhood visual-field symptom in a fair number of cases is a homonymous lateral hemianopsia. Referring, however, particularly to the types of visual-field disturbance which terminate in bitemporal hemianopsia, the temporal field tends to be lost first from above downward, although this is not an invariable rule. This is the temporal slant to which reference has been made. At the same time there may be an indentation in the color field, tending to loss of its temporal boundaries, or the same indentation may be found using white test objects with the aid of small test object perimetry. Gradually, progress takes place until finally the entire field disappears. This is the usually described evolution but, in many of the instances, even in the earlier stages of the temporal slant, or without its presence, the small, paracentral and hemianopic scotomas appear, expanding in the manner described until the loss of the half field is complete.

But remarkable variations of the field are not uncommon. Doubtless all of us have noted a hemianopsia on one day, when on the next day it had disappeared, or the field had assumed an entirely different shape, due to alterations in the vascular pressure. In a certain number of cases we have a unilateral hemianopsia, and complete, or practically complete, blindness in the opposite eye. The two eyes are rarely affected to an equal degree. It is probable that in most instances as the result of treatment, the restoration of the field is in a reverse order to that in which it was lost, that is, the lines of the visual field restore themselves from below upward in a series of sloping curves. Doubtless all of you have seen the very interesting studies in this respect

which were made by Dr. Walker in Cushing's service.

ANOMALIES OF OCULAR MOTILITY. This may be briefly dismissed. Elaborate statistical information indicates that in from 10 to 27 per cent. of the cases of hypophyseal disease there is some implication of the exterior ocular muscles, generally those supplied by the oculomotor, but isolated paralysis of the external rectus is not entirely uncommon, and I have seen isolated palsy of the superior oblique. Occasionally, a complete exterior ophthalmoplegia is manifest. This I have seen once or twice. It is referred to by Uhthoff.

Naturally, patients with pituitary body disease may be the subjects of syphilis. The association between hereditary syphilis and pituitary body involvement is well known, but the subject of acquired syphilis may also be the victim of a hypophyseal growth, and it is not necessary that the growth shall itself be syphilitic; in point of fact, gumma of the hypophysis is very rare. Simmons found among 1700 hypophyses which he examined microscopically only 9 with syphilitic changes. Of course, the gland may be secondarily involved from dural or bony syphilis. I make reference to this association of syphilis with hypophyseal disease because, while I know of no statistics to prove the suggestion, it is quite possible that the oculomotor palsies of various types are more frequent in association with pituitary body disease when the subject is also syphilitic, even if the gland itself is not luetic.

The non-surgical treatment of hypophyseal disease is concerned in largest measure with glandular feeding, and the advantage of glandular feeding when the stage of glandular insufficiency exists is well known. Moreover, this advantage is enhanced if extracts of glands other than the one primarily involved are employed, because the pituitary body malady is a polyglandular one.

A number of examples of restoration of vision and the fields of vision following organotherapy are on record and, in this country, notable instances have been reported by Timme, Elsberg, myself and other surgeons. In illustration of this method of therapeutics, I may summarize, briefly, three case histories, elsewhere reported in detail.

CASE A. An unmarried white woman, aged 39, with tumor of the pituitary body, demonstrated by x-ray examinations, had complete bitemporal hemianopsia, ophthalmoscopic op-

tic nerve atrophy (very pallid discs), left complete oculo-motor palsy, absolute blindness lasting twelve days in the right eye and six weeks in the left. Under the influence of large doses of thyroid extract, associated with inunctions of unguentum hydrargyrum, the vision of the right eye was completely restored and that of the left eye partly restored (6/9), and the hemianopsia, ocular muscle palsy (except that of the ciliary muscle) entirely disappeared. Constitutional syphilis was not demonstrated, either by the history or by any method of examination. During a period lasting from June 1st to October 3rd, the patient took 400 five-grain tablets of thyroid extract, and received 60 one-drachm inunctions of mercury; intermittently from August to October, iodid of potassium was exhibited (exact dosage not known). During three weeks prior to beginning the thyroid feeding the patient had taken iodid of potash, protiodid of mercury, and a few inunctions, but none of the remedies in large doses. For six months after the completion of the thyroid-mercury medication recorded above, the patient continued to take irregularly thyroid extract and to have mercury inunctions, but as she was not under my constant observation, I am unable to state accurately how much additional mercury and thyroid extract was administered. The final good result recorded was noted at the end of this period. The patient has not been seen for several years.

CASE B. An unmarried white woman, aged 51, with tumor of the pituitary body, demonstrated by x-ray examinations, had complete bitemporal hemianopsia (preceded by hemianoptic scotomas and color hemianopsia), reduction of visual acuteness (O. D. 6/60, O. S. 4/100, lowest ebb), and ophthalmoscopic optic disc atrophy; no muscle palsies. During a period lasting from June 10, 1914, to December 10, 1914, she took 400 two and one-half grain tablets of thyroid extract, and 200 two and one-half grain tablets of pituitary body extract, and received 58 one-drachm inunctions of unguentum hydrargyrum. Vision of O. D. now 6/7.5, but vision of O. S. reduced from 6/12 at first examination to 4/100. Thyroid-pituitary body extract was continued, but no more mercury given. From July, 1914, to February, 1917, she consumed 2,100 tablets (2½ grains each) of thyroid extract and of pituitary body extract, because, although vision was practically restored nearly two

years before, if these medicines were discontinued, headache returned. No history of syphilis, and none was demonstrated by laboratory tests.

CASE C. An unmarried woman, aged 18, with tumor of the pituitary body, not absolutely demonstrated by x-ray examination, in that the report was "sella ill-defined and cloudy," with periods of diplopia for at least a year, moderate choking of each disc (2.5 D.) and when examined complete blindness of the right eye (lasting one week), and vision of left eye reduced to counting fingers in the temporal field, the nasal field being entirely dark, but the temporal field for *form* intact, at the expiration of 40 days of active medication, during which time she took 200 grains of thyroid extract, and received 30 one-drachm inunctions of mercury, had vision restored, 6/10 each eye, 6/7.5 both eyes, the choked discs had disappeared, the surfaces of the discs being pale, and the visual fields normal. History and laboratory tests negative in so far as syphilis is concerned.

The question arises as to whether the mercury used in large doses in the treatment of the patients mentioned in the summarized case histories was a necessary adjunct and a large contributor to the excellent results and, if it was, how did it act advantageously, and why?

It may be argued that all of these patients may have been luetic in spite of negative examination. Certainly it must be admitted that all of them showed a somewhat remarkable tolerance to mercury; also a non-positive Wassermann does not exclude syphilis. And yet in all other counts they were free from the suspicion of specific taint, and in the original reports the cure was attributed, certainly in largest measure, to the thyroid-extract pituitary body feeding.

A second suggestion, which has come into prominence in recent years, especially since thyroid extract has achieved success in the treatment of certain types of keratitis and uveitis, is that insufficiency of glandular secretion inhibits the action of remedies which possess a so-called antiphlogistic, or, in a sense, specific influence. This being eliminated by organotherapy, the inhibition is removed and the remedy is free to exercise its curative activity. That more or less antagonism exists between the processes of mercurialization and inflammation, at one time maintained, and not, I think, altogether abandoned, is well known.

Should this be true, it might be asserted that this constituted the basis of the good effect of the mercury therapeutics, save only that primary inflammation of the pituitary body, if it occurs at all, must be very unusual (Adami).

As organotherapy alone in hypopituitarism has often proved successful, it may be asserted that the action of mercury as a curative agent in this regard was negative, but it is difficult to believe that its influence was negligible, considering the large amounts of the drug which were exhibited.

Mercury undoubtedly stimulates in some particulars glandular activity—the salivary gland and the pancreas. Whether such influence is ever exercised on the endocrine glands I do not know. If it is, mercury and thyroid and pituitary body extract, simultaneously exhibited, may possibly develop a synergic action, each aiding the other in stimulating glandular secretion with advantage. It has, however, also been stated that mercury inhibits thyroid activity.

Whatever the explanation may be, it appears to be a clinical fact that in stages of glandular insufficiency the effectiveness of organotherapy is probably enhanced by simultaneous administration of mercury (preferably by inunctions), and the gland extracts, even though the presence of syphilis is not demonstrable by the usual methods.

It is probable that a combination of thyroid and pituitary gland extracts is more efficient than either of the extracts alone, and that this combination, associated with mercury is more effective than is an extract of one gland, even though given in conjunction with unguentum hydrargyrum.

The value of radium in the treatment of pituitary body lesions has unquestionably been demonstrated, applied both primarily and after operative procedures. Time, however, does not permit a discussion of this agent in this regard; also, it is not strictly germane to the present discussion.*

1705 Walnut Street.

* The paper was illustrated with a number of charts of the visual fields in pituitary body disorders, exhibiting the various types of hemianopsia and scotomas described in the text. I have quoted freely from other papers which I have published on this subject, especially: "Visual Phenomena in Pituitary Body Disease," Transactions of the College of Physicians of Philadelphia, 1915; "Pituitary Body Disease and the Results of Glandular Administration," Archives of Ophthalmology, Vol. XLVI, No. 2, 1917; and an address on "Pituitary Body Disorders in Syphilitic Subjects," read before the New York Academy of Medicine, December 21, 1920, which will be published in the May number of the Archives of Ophthalmology.

THE SURGICAL TREATMENT OF CERTAIN TYPES OF DYSPEPSIA.*

By STUART McGUIRE, M. D., Richmond, Va.

A generation ago the physician held undisputed sway in the treatment of digestive disturbances and the suggestion that dyspepsia could be cured by surgery, when medical, dietetic and hygienic measures had failed, would have been regarded as an absurdity. It is now accepted that indigestion when chronic or recurrent is almost invariably caused by organic changes in the stomach, duodenum, gall-bladder or appendix, and that relief from symptoms in such cases can only be permanently secured by the surgical correction of the anatomical lesion.

Every one suffers at times from indigestion due to imprudence in eating, but no one has constant, persistent, dyspepsia, lasting for months or years, unless it be due to some organic disease. A case of indigestion ought not to be subjected to surgery until it has been carefully and properly treated by medical measures without success, but every case that fails to secure relief in a reasonable time should be examined to see if there is not some indication for operative intervention.

In investigating a patient, it should be remembered that while the symptoms may be due to disease of the stomach itself, they may also be due to reflex irritation from disease of some other abdominal organ. It is a fact that in nine out of ten cases the lesion is not in the stomach but in some associated viscus such as the duodenum, gall-bladder or appendix. In other words, while the symptoms are gastric and the treatment surgical, the operation required is not necessarily on the stomach.

Obstruction of the pylorus may be organic, such as results from the cicatricial contraction of an ulcer, or spasmodic, such as results from reflex nervous irritation due to appendicitis, cholecystitis or duodenal ulcer. The first is mechanical and should be relieved by making a new exit for the stomach contents, the second is functional and should be relieved by diagnosing and correcting the cause which produced it.

At one time it was thought that the operation of gastro-enterostomy was a panacea for

all gastric disorders. It was found, however, that while in some cases it accomplished brilliant cures, in others it not only did not relieve but actually increased the patient's distress.

A gastro-enterostomy will cure the symptoms due to an organic obstruction of the pylorus because it relieves the condition by affording a new exit for the stomach contents. It will not cure but will aggravate the symptoms due to spasmodic obstruction because it overcomes the protective effort on the part of nature to prevent the passage of irritating gastric contents into the intestinal tract.

The most common operations for the relief of dyspepsia due to organic diseases of the stomach are partial gastrectomy, pyloroplasty and gastro-enterostomy.

Partial gastrectomy is the operation done for ulcer or carcinoma of the pyloric end of the stomach. It originated as a pylorotomy with anastomosis of the cut end of the duodenum into upper angle of the gastric incision; it was then changed by Billroth to complete closure of the stomach with a posterior gastro-jejunostomy; and, finally, it has been perfected by Mayo, who recently introduced the method known as the modified anterior Polya operation. This operation can be done with low mortality on suitable cases, and gives admirable results. Patients with ulcer of the pyloric end of the stomach are relieved of all symptoms and restored to complete health. Patients with cancer of the stomach have their lives prolonged, and in the 306 cases reported by the Mayo Clinic, over 37 per cent. of the patients have remained well at the end of a three-year period. This is a most satisfactory showing for the surgical relief of an otherwise hopeless condition, and even better results may be expected when cases are diagnosed earlier and referred to the surgeon more promptly.

Pyloroplasty is the operation done on the pylorus for the excision of an ulcer or the relief of obstruction due to non-malignant disease. The operation at first consisted of an incision through the wall of the pylorus in a line parallel with its long axis and the closure of the incision at right angle to the direction in which it was originally made, thus widening the pyloric opening and relieving the narrowing. This operation has been modified by Finney, Horsley and others, so as to make it

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more effective and applicable to a larger number of cases. Pyloroplasty is an ideal operation both from an anatomical and physiological standpoint, but it is also ideal in the sense it can rarely be satisfactorily performed. In 72 per cent. of patients, according to Deaver, the ulcers are located so far from the pylorus that the method is not applicable, and in cases of long standing the walls of the pylorus are so thick and inelastic that the tissues cannot be approximated in the desired position without producing a deformity which interferes with the motility of the stomach, stitches often cut out when tension is made on them, and the suture line is insecure and there is danger of leakage.

Gastro-enterostomy is the operation most frequently done for benign obstruction of the pylorus and for duodenal ulcers. It consists of an anastomosis between the stomach and a loop of the jejunum, thus establishing a new opening through which the contents of the stomach can reach the intestinal tract. The effect of the operation on the stomach is both mechanical and chemical. Mechanically, it permits the gastric contents to pass readily into the intestines as the new opening between the stomach and jejunum relieves any obstruction that may have existed at the pylorus. Chemically, it lowers the acidity of the gastric contents, as the stoma also permits the alkaline secretions of the liver and pancreas to pass into the stomach. Thus, gastric dilatation and food stagnation are cured by drainage, and hyperacidity of the stomach is relieved by neutralization of the acid with the patient's own alkali.

How a simple gastro-enterostomy cures a duodenal ulcer is a theoretical question. It is a practical fact that it does cure. While gastric ulcers frequently lead to cancer, duodenal ulcers do not undergo malignant changes. There is, therefore, no reason to excise them unless they are causing hemorrhage. If this be the case and the ulcer is accessible it may be wise to destroy it with a cautery. Balfour noted the fact that a peptic ulcer which perforated always healed if the patient lived. An analogous condition can be created by burning through the bowel over the center of an ulcer with a pointed cautery and then suturing the opening and protecting the wound with a tag of mesentery or omentum. The objections of-

ferred to the operation of gastro-enterostomy are that sometimes food escapes too quickly from the stomach, causing bowel disturbances; that occasionally bile and pancreatic secretion enter the stomach in large quantities, causing nausea and vomiting, or the so-called vicious circle; and, finally, that in a few cases an ulcer develops in the jejunum at or near the anastomosis due to the irritation of a mucous surface which has no natural immunity to the action of gastric juices. This complication can be made infrequent by placing the opening at the bottom of the stomach so there will be no retention, and by using catgut instead of silk or linen so there will be no unabsorbed sutures.

While the operation of gastro-enterostomy requires explanation and apology, still in properly selected cases it gives good results and will continue to be frequently employed by the best surgeons the world over until some better method is devised. The operation has been much abused: by its friends who in their enthusiasm perform it on unsuitable cases and by its critics who offer no satisfactory substitute for it. Say what you please, it has given relief to many patients and will be the stepping stone to future progress.

The most frequent operations for the relief of dyspepsia not due to organic diseases of the stomach are those done for appendicitis, cholecystitis, duodenal ulcer or other diseases which interfere with digestion by causing a spasm of the pylorus. Pylorospasm is not a disease but a symptom. To endeavor to circumvent it by a gastro-enterostomy will do harm and not good. The source of the reflex irritation which causes the spasm must be found and relieved. If it be cholecystitis, the gall-bladder should be removed; if it be pancreatitis, the gall-bladder should be drained either externally by a cholecystostomy, or internally by a cholecystenterostomy; if it be appendicitis, then the appendix should be taken out, but the surgeon should be sure that no other diseased condition is left in.

The unsatisfactory results which sometimes follow operations for the cure of dyspepsia may be classed under four heads:

1. *Failure of the diagnostician to recognize the true cause of the symptoms:* It is a generally accepted truth that successful treatment must be based on a correct diagnosis, and in

no line of work does this apply more forcibly than in the surgical cure of dyspepsia. Every possible means should be employed before operation to determine the pathological condition that causes the symptoms, but when the abdomen is opened, a thorough and complete examination should be made of all the various organs. The obvious cause is not always the real cause of indigestion. A provisional diagnosis of gall-bladder disease may apparently be confirmed by finding the presence of gall-stones and yet the actual trouble may be really in the appendix. Here the removal of the gall-stones will do little good unless the appendix is also taken out.

A more frequent cause of failure is to remove a chronically inflamed appendix and leave other diseased conditions uncorrected. This is especially liable to occur when an appendectomy is done through a small split muscle incision. Except in children and in acute cases of appendicitis in adults, an appendectomy should be done through a mid right rectus incision which gives sufficient room to completely explore the abdomen and which, by extension up or down, will permit the correction of any diseased condition found in the pelvis or upper abdominal region.

2. *Failure of the operator to apply the proper technique to meet the indications:* The pathological changes found in the abdomen vary so greatly that great wisdom is often necessary to deal with them properly. A standard method to meet different indications has not been adopted and much is left to the theoretical views or the practical experience of the individual operator. Errors of judgment are frequently made by two classes of surgeons and many patients are made worse and not better by unnecessary or illogical abdominal operations. These surgeons are those who are untrained and those who, although experienced, are prejudiced for or against certain procedures. In former days, untrained surgeons were barred from work by high mortality. The modern technique, which is easily acquired, has removed this obstacle and they now operate without loss of life but frequently without relief of symptoms. Well known and experienced surgeons are sometimes so biased by their personal views that they do a pyloroplasty when a gastro-enterostomy would be better, or drain a gall-bladder which should

be removed, or remove a gall-bladder which should be drained. All this will be corrected in time. Untrained surgeons will learn by experience or be restricted by law, and dogmatic surgeons, prejudiced by the part they have taken in evolving certain operations, will die and be replaced by men with open minds, who will impartially weigh all the evidence and adopt the true and discard the false teachings of the past.

3. *Failure of surgery up to the present time to develop a satisfactory operation to correct certain conditions:* Surgery of the stomach and associated viscera is comparatively new. Much has been done but much remains to be accomplished. Only a generation ago, the causative relation of appendicitis and other diseases to dyspepsia was not recognized, Murphy's button was generally employed as the accepted method of forming an anastomosis, and the x-ray had not come into use as a diagnostic agent. So, a generation hence, many of the views and methods of today will doubtless be obsolete and will be replaced by theories and practices which will give better results. Many of the operations now employed by the best surgeons will be abandoned and new operations will be devised to correct defects which we already recognize but do not know how to overcome, or to accomplish results which we now desire but do not know how to secure.

4. *Failure of the physician to properly direct and supervise the patient's post-hospital treatment:* A surgical operation performed on a patient suffering from chronic or recurrent dyspepsia is but the first step in his cure. The operation simply removes the cause of his symptoms and the case must be carefully and judiciously treated for a long time before he can be said to be well. Frequently the difference between success and failure depends on the post-operative and post-hospital management.

After a partial gastrectomy, the size of the stomach is reduced and food has to be given in smaller quantities and at more frequent intervals than normally. If before operation there is complete achlorhydria, there is no hope that acid production will ever be re-established and its lack must be supplied artificially by medication.

After a gastro-enterostomy, the stomach empties more rapidly and frequently contains

bile and pancreatic fluid which enter through the anastomotic opening. This requires a careful regulation of the diet and occasionally the use of gastric lavage until the stomach acquires a tolerance.

After an operation on the duodenum, gall-bladder or appendix, to remove the cause of pylorospasm, the patient must be systematically treated until the hypersensitiveness of the pyloric muscle is relieved and the spasm habit is overcome.

The post-operative treatment of patients is carried out during their convalescence at the hospital under the supervision of the surgeon. The post-hospital treatment is continued after their return home under the direction of their family physicians.

While at the hospital, the patient should be impressed with the fact that he is not well because his wound has healed and that it will be necessary for him to be prudent until sufficient time elapses for his organs to accommodate themselves to new conditions and for his weight, strength and nervous equilibrium to be restored. On his return home, he should be directed to place his case in the hands of his family doctor who should be fully informed as to the nature of the operation that had been done and given suggestions if any special indication existed for treatment.

Only by cordial co-operation between surgeon and physician can the best results be secured for these patients.

A STUDY OF A CONSECUTIVE SERIES OF NEPHRECTOMIES.

By J. SHELTON HORSLEY, M. D., Richmond, Va.

Recent advances in urological technic have made it possible to determine the function of each kidney with considerable accuracy. The introduction of dyes for the study of renal function and the greater accuracy of blood chemistry have resulted in marked advances in the clinical diagnosis of renal disease.

Excision of a kidney is an operation that should not be lightly undertaken. An appendix may be removed, or a gall bladder extirpated, without any bad effect, even if these organs are comparatively normal. The removal of a kidney, however, is either helpful or deleterious because in the removal of a healthy kidney there is much greater strain upon the remaining kidney than in removing a diseased kidney. Where only one kidney is

affected and the disease comes on gradually, as a tumor or pyonephrosis, the burden of renal function is gradually thrown upon the healthy kidney so that it has already hypertrophied and undergone changes to enable it to take up the normal work of both kidneys. Removing a diseased kidney under these conditions throws but little or no extra burden upon the remaining healthy kidney.

It has been determined by Martin Fischer and others that, if both kidneys are perfect in structure and function, only about 25% of the kidney capacity, which is about half of one kidney, is essential to life, provided the additional work is not too suddenly assumed. When, however, one kidney is diseased, the remaining one is probably not physiologically perfect. Animals in which both kidneys are removed do not develop before death many of the classical symptoms that are attributed to diseases of the kidney. They never, for instance, become edematous, though edema is commonly associated with certain types of nephritis. This edema is not due to the primary disease of the kidney but to some toxic influence outside which involves the kidney as one of the organs or tissues affected.

Except in some unusual and grave emergency a nephrectomy should never be done until the patient has been studied carefully by a urologist in conjunction with a well-trained clinical pathologist and roentgenologist. The patient should always be cystoscoped and one or both of the ureters catheterized. Phenol-sulphonaphthalein is injected into the muscle or vein and the time of its appearance from each side is noted, together with the amount of excretion. The appearance of the bladder is often significant and in most cases of tuberculosis gives very positive evidence, even before the ureters are catheterized. It is best to have roentgenograms and pyelograms made. The first pictures can be taken before the pyelogram and it is more satisfactory to observe the injection of the fluid for the pyelogram under the fluoroscope. This, of course, should be done by a competent roentgenologist. The blood should be examined, particularly for nitrogen blood urea. The phenolsulphonaphthalein test is not always accurate but, if the patient's condition appears fairly normal and the nitrogen blood urea is not more than seventeen or eighteen m.gr. per 100 c.c., it may be assumed that the urinary excretion is satisfactory.

A nephrectomy, then, should not be done until the urologist, the clinical pathologist, and the roentgenologist have passed upon the case, unless in some grave emergency where the risk of delay would be too great. If these examinations are carefully carried out and the operation is properly performed, the mortality from nephrectomy will not be any greater than the mortality from hysterectomy.

As for the type of operation, I use either the lumbar incision of Mayo, which gives a very satisfactory exposure in kidneys that are not too large, or the abdominal incision along the

free the rib markedly. If this incision is made too close to the rib, the pleura may be opened but this is of no great consequence as the wound can be whipped over with catgut and a wet piece of gauze packed over the wounded pleura, held with a catgut suture, and withdrawn after four or five days. The fear of wounding the pleura has often handicapped many an operation by giving insufficient exposure. After opening the fatty capsule of the kidney posteriorly, the kidney is mobilized by the insertion of the hand. If the kidney is high up, the ureter is hooked up with the

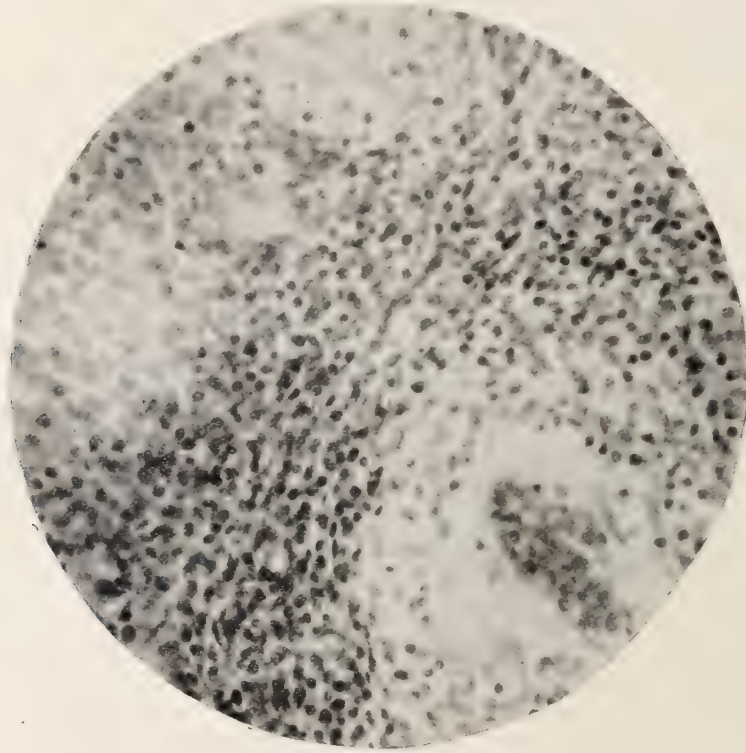


Fig. 1.—Photomicrograph of a section of a tubercular kidney. Note the giant cell in the lower right hand corner, also epithelioid cells and leukocytic infiltration. 325 diameters.

outer border of the rectus muscle. The incision of W. J. Mayo begins just above the upper border of the 12th rib about $2\frac{1}{2}$ inches from the spine and goes downward until about one inch above the crest of the ilium. The ilio-hypogastric and the ilio-inguinal nerves should be observed and protected from trauma during the operation and from sutures during the closure of the wound. It is highly important to have ample exposure over the rib. For this reason the inferior attachments of the 12th rib should be well loosened. Dividing the fascia and muscle posterior to the incision will

finger and brought into the lower part of the wound. If the operation is for infection by pyogenic or tubercular bacteria, the ureter is injected with about 2 c.c. of pure carbolic acid from a hypodermic syringe. The carbolic is worked up and down so that the upper portion of the ureter, as well as the lower, may be affected by the carbolic. The ureter is clamped and ligated below the clamp with catgut. It is again injected with carbolic between the clamp and the ligature and below the ligature and divided. In this way the carbolic is thoroughly in contact with the interior of the

ureter before the ureter is opened. This enables the surgeon to turn up the kidney and, while the 12th rib is strongly retracted, the fat can be gently stripped from the pedicle with dry gauze.

The pedicle is clamped with three forceps and divided between the middle forceps and the forceps next the kidney, and the kidney is removed. The pedicle is tied with stout catgut, which is applied under the nose of the forceps farthest from the kidney and the ligature is tightened down as this forceps is removed. A second ligature of catgut in a needle transfixes the pedicle between this ligature and the remaining forceps and this ligature is tied down as the last forceps is removed. In this way there are two ligatures of catgut at a short distance from each other. Large vessels should always have two ligatures applied so that the ligature nearest the heart takes up the pressure from the arterial current and permits the tis-



Fig. 2.—Drawing of the external appearance of a pyonephrotic kidney with stone.



Fig. 3.—Section of the kidney shown in Fig. 2. Note the large cavities which contained pus and the stone, which is embedded in the pelvis of the kidney. Pyonephrotic kidneys often contain relatively less healthy kidney substance than tubercular kidneys.

sue between this ligature and the distal one to heal more readily because it is not subjected to the constant pounding of the arterial current. Sometimes it is wise to approach the pedicle from above and remove the ureter last. Occasionally, too, where there is great need of speed, the pedicle clamps may be left on and the wound sutured with the handles of the clamps at the upper portion of the wound. The clamps are removed after 48 hours. In urgent cases where the pedicle is difficult of access, this saves about five to ten minutes of time in the operation though, if the pedicle can be tied securely, it is somewhat more comfortable for the patient during the first few days after operation.

When the kidney is large, and especially if there is a malignant growth, the abdominal incision is made. This is ample and goes along the outer border of the rectus muscle. The peritoneal cavity is opened and the anterior surface of the kidney inspected. Sometimes the peritoneum can be stripped up so as to make the operation practically extra-peritoneal. If this cannot be done readily there is no hesitation about incising the peritoneum posteriorly. The colon should be retracted to

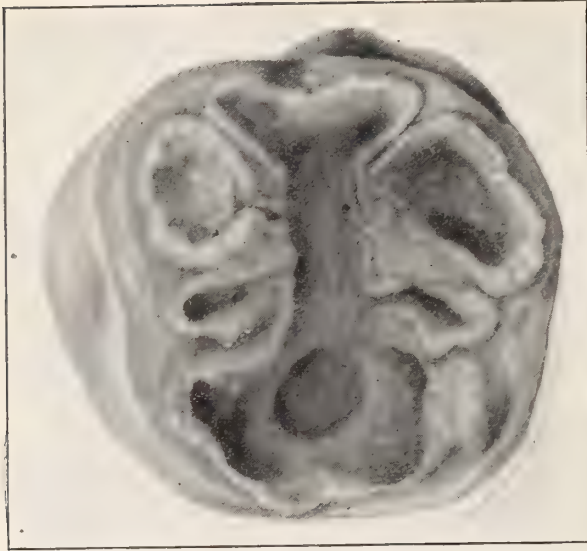


Fig. 4.—Section of a pyonephrotic kidney without stone.

the inner side and an incision is made along the outer attachment of its mesentery. The intestines are well packed off with moist gauze and the pedicle of the kidney is exposed and doubly ligated. With malignant tumors, particularly a hypernephroma, the growth often projects into the renal vein and, if the tumor



Fig. 5.—A drawing of a hypernephroma, or mesothelioma. Note the light colored material, the distinct trabeculae and the apparent encapsulation.

is manipulated too much, it may force the particles of the tumor into the vein before the vein has been clamped. Sometimes, on account of the size of the tumor, however, it may

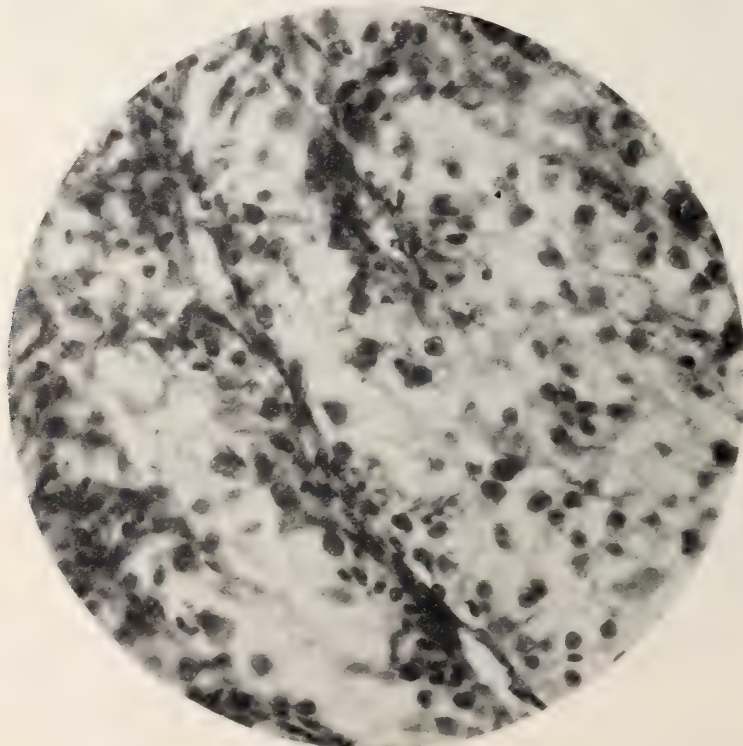


Fig. 6.—Photomicrograph of the hypernephroma shown in Fig. 5. Note the clear-cut light cells, many of which have apparently no nuclei. 325 diameters.

be necessary to mobilize it first. The ureter is treated as in a lumbar nephrectomy.

If the ureter is thoroughly injected with carbolic there is no occasion for making an extensive dissection to remove it. If the ureter is greatly involved, as in tuberculosis, it is not probable that the bladder is free from disease. Removing the kidney abolishes the function of the ureter and gives it complete rest. The square surface of the internal part of the ureter is exceedingly small as compared with the square surface of the bladder. If, then, we leave an affected bladder, which has to function, it seems useless to prolong the operation to remove a ureter which can be disinfected on its mucous surface and put absolutely at rest by removing the kidney.

In old infections of the kidney with dense adhesions, the capsule may be split, stripped to the pelvis and again divided. The kidney is thus easily mobilized and removed subcapsularly.

The cases herewith reported are sixteen nephrectomies, being all that have been done

at St. Elizabeth's Hospital since it was opened in February, 1912, to the present time. In all of these cases a competent urologist has examined the patient. During the last year, my associate, Dr. A. I. Dodson, who does the urological work at St. Elizabeth's, has examined all the patients, and within the past year seven of the total group of sixteen nephrectomies have been done. Of these sixteen nephrectomies, all have made a satisfactory operative recovery except one who died. This patient was 70 years of age, rather stout, and had a stone in the right kidney complicated with pyelitis and nephritis with small cysts in this kidney. The right kidney function, as determined by the usual methods, was almost nil while the left was about normal for his age. This patient contracted bronchial pneumonia and died on the eighth day after operation.

Five nephrectomies were for tuberculosis of the kidney and Dr. Dodson will report upon this disease more in detail in a later communication. Several of these cases were poor risks from a general standpoint, but in each instance they showed that the remaining kidney was apparently normal in function and all of the patients made a satisfactory immediate operative recovery. (Fig. 1.) Three nephrectomies, Figs. 2, 3 and 4, were for pyonephrosis; in two of these there were also stones. Three of the nephrectomies were done for stone in the kidney in which the kidney function was very low or there was infection around the stone, though not sufficiently marked to be termed a pyonephrosis. One patient had an acute hydronephrosis with nephritis and intense pain. The patient was gravely shocked and was operated upon in an emergency, though the urological study had been made a few months before. In one patient there was a cortical pyogenic abscess that was apparently hematogenous in origin and did not communicate with the pelvis of the kidney. One patient had a cystic kidney that had been operated upon elsewhere and the cyst removed and the kidney drained. The patient continued having pain and urological examination demonstrated that the kidney was functionless. Nephrectomy showed that the kidney was largely a mass of scar tissue with a few small cysts. It was removed with considerable difficulty. The patient developed pneumonia but recovered and has been greatly improved since the operation.

In one case there was a hypernephroma.



Fig. 7.—Adenocarcinoma of a double kidney. This was removed from the right side and the upper portion of the photograph shows one kidney with a distinct ureter which blended with a lower kidney having also a distinct ureter. The lower kidney was the site of the tumor. The tumor was a very large one, as may be judged by the fact that the upper kidney was about normal in size for a single kidney.

(Figs. 5 and 6.) Metastases from a hypernephroma are very common, much more common than is usually believed. This patient made a satisfactory operative recovery but a few months later developed a metastasis in the lower jaw bone and died ten months afterwards. The illustrations show the histologic appearance of this hypernephroma, which is typical. This is a very interesting tumor. Its name indicates that it comes from the adrenal gland though Wilson, of the Mayo Clinic, has satisfactorily proved that it does not. The growth occurs as frequently in the lower pole

roentgenologist for a few weeks after operation.

One of this series of cases was a large adenocarcinoma of the kidney. The tumor was very low down for a kidney tumor. It was removed by the abdominal route and the tumor was found to spring from the lower portion of a double kidney on the right side. These two ureters are well shown in the illustration and were demonstrated by Dr. Dodson before the operation. On the extreme edge of the liver over the gall bladder there was a small growth which appeared to be possibly a metastasis.

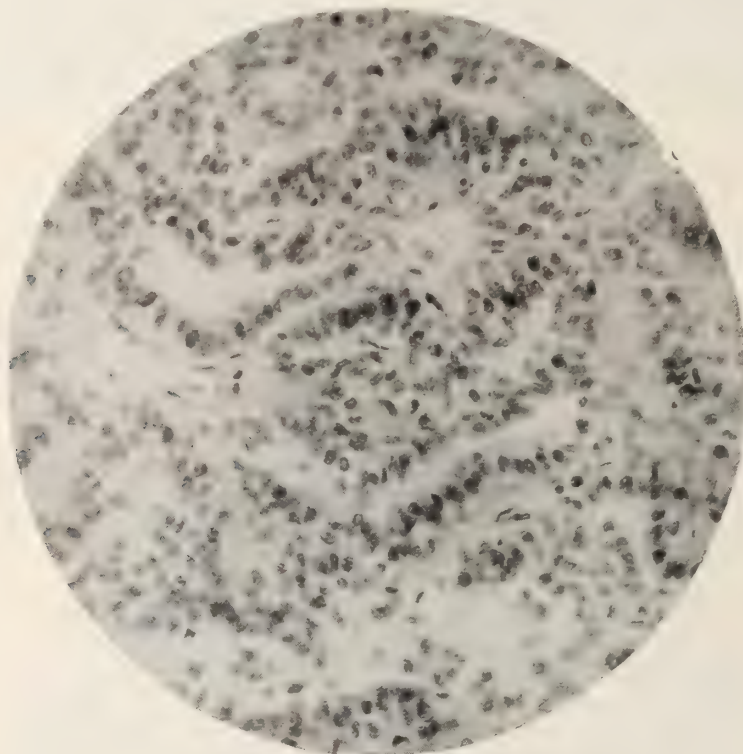


Fig. 8.—Photomicrograph of adenocarcinoma of the kidney shown in Fig. 7. The cells apparently sprang from the tubules and are reproducing with some accuracy the tubules of the kidney. In certain places the cells are fairly well differentiated. There are no mitotic figures but the nuclei vary greatly in shape and position. This tumor is not so malignant as the hypernephroma.

of the kidney as in the upper pole and its structure is unlike tumors of the adrenal gland. It should be called a nephroma or a mesothelioma. It doubtless springs from nephrogenic matrices carried in by the mesonephros, which is the embryologic antecedent of the kidney. The adrenal gland has a very different embryologic origin from the kidney. It is probably best to treat these tumors with intensive roentgen therapy in the hands of a competent

The patient's remaining kidney, however, had a slight degree of nephritis and it was felt best not to prolong the operation. There was no evidence of any metastasis elsewhere and as the patient had very relaxed abdominal walls, her physician was advised to keep a careful watch over her and, if the lesion on the liver grew, the patient could return subsequently for further operation. On section, this growth showed a few yellow places somewhat like a

gross section from a hypernephroma, but most of it was soft, fungus-like material that seemed to be largely broken down. (Figs. 7 and 8.) A microscopic section showed an adenocarcinoma with the cells rather well differentiated and making fairly satisfactory efforts in some places to reproduce renal tubules. This is not a very common form of kidney tumor and is less malignant than a hypernephroma.

Summarizing these cases, there was a total of sixteen in a consecutive series with one death from pneumonia in a patient 70 years of age. One of the patients with tuberculosis of the kidney is still in the hospital, though making a satisfactory recovery. The patient with the large adenocarcinoma is reported by her physician on March 18th, 1921, as doing well. One of the patients that was operated upon for tuberculosis of the kidney is complaining of slight bladder trouble but is much better than before the operation and has gained considerably in weight. The hypernephroma patient died from metastasis ten months after the operation. The others are in good condition and seem practically in perfect health.

ACUTE OBSTRUCTIVE LARYNGITIS IN CHILDREN.*

By GEO. J. TOMPKINS, M. D., Lynchburg, Va.

The usual classification of acute inflammatory conditions in the larynx of children, attended by restriction of its caliber and impeded or obstructed respiration, is Acute Catarrhal Laryngitis (or Spasmodic Croup); Traumatic Laryngitis; and Laryngeal Diphtheria (or Membranous Croup). The purpose of this paper is to at least raise the question if this classification does actually include all of the acute inflammations of the child's larynx seen in ordinary practice, by which a correct clinical diagnosis can be made, on which depends a rational, curative and, therefore, life-saving treatment. I think it does not and, so believing, desire to state my reasons, supported by experience in bedside practice, which however limited, may warrant further investigation and result in progress.

After the discovery of the Klebs-Löffler bacillus as the direct cause of diphtheria, the contention arose over the claim that there are two kinds of membranous croup, viz., the diph-

theritic and the non-diphtheritic, and still today a division of opinion exists with the weight of authority in favor of regarding all membranous croup as true diphtheria. It is a discussion of this particular question, and not of the traumatic and catarrhal inflammations involving the larynx, that is here intended.

Perhaps it would be just as well to discard the belief that obstruction in acute infections of the larynx is always due to the presence of false membrane; why should we, when a child develops dyspnea in these conditions, jump to the conclusion that the larynx is being blocked by membranous exudate? We are not so hasty in the case of an adult, because inspection shows us that it may also be due to swelling and tumefaction of the soft tissues. If we could as readily see into the child's larynx, we would, no doubt, at times find the same cause and not be so ready with a diagnosis of membranous laryngitis, but call it something else of a more definite nature that would lead to a more certain remedy. Of course, I believe we should ever bear in mind the probability of an infection of the larynx in infancy and childhood with signs of obstruction, being caused by the Klebs-Löffler bacillus and be prompt to administer antitoxin, but go further and bear in mind at the same time the possibility of some other organism being the cause, especially the streptococcus, and be prepared to fight it as a separate or combined enemy.

During some twenty years' practice in laryngology, it has been my experience from year to year to see through the fall and winter months a few cases of obstructive laryngitis, in children ranging in age from one to seven years. The call usually comes through the family physician who generally outlines a history about like this: The child, perhaps of former robust health, was taken some hours previously by what the parents presumed was an attack of ordinary spasmodic croup, hoarseness, characteristic cough and stridulous breathing, but instead of the attack passing off in an hour or two, like croup, the child had begun to show signs of increasing prostration, with quickening pulse, rising temperature, anxious expression and grave dyspnea. Perhaps beginning cyanosis has increased the alarm of both the parents and physician and the latter considers intubation urgent. (When the curtain rises upon such a scene it has al-

*Read at the first meeting of the Virginia Society of Otolaryngology and Ophthalmology, in Richmond, February 3, 1921.

ways made me feel that the stage is set for one of the worst tragedies that it is my misfortune to ever witness. Former experience has taught that death stalks nigh and often, so often, yes, too often! The end will be another mother, broken-hearted, weeping for her child which is not, and refuses to be comforted.)

Following the text-book teaching, it has been my custom to regard these cases as most virulent types of diphtheria that demand the prompt administration of large doses of antitoxin, by the quickest route through which it can be conveyed into the system. I have long since abandoned the sub-cutaneous injection and insert the needle either deeply into the infra-scapular muscles, or gluteal region, and sometimes, by preference, directly into a vein. My rule is to intube early enough, when possible, to prevent loss of strength from labored breathing.

Time after time I have seen children who had received large doses of antitoxin (from twenty to one hundred thousand units) die from toxemia and heart exhaustion within twenty-four hours of the onset of their disease even though their breathing had been maintained free by the tube. The observation that these children linger sometimes for several days, with the severity of their symptoms steadily increasing and apparently uninfluenced by the liberal dosage of antitoxin given in the quickest way to obtain maximum effect, and do not die before sufficient time has elapsed for it to have exerted its specific action in combating the disease, very naturally has raised a question in my mind as to the correctness of the diagnosis and the probability of error in assuming that the Klebs-Löffler bacillus is the invading organism.

The diagnosis is not invariably based on the cardinal symptoms of diphtheria—that is, the presence of characteristic false membrane and the positive laboratory findings. Inspection of the fauces frequently reveals nothing and a view of the larynx in young children is out of the question. There is no time to be lost in waiting for a culture. So blindly we proceed with the antitoxin, and blindly we isolate the patient and quarantine the home and thus begin what subsequent events too often prove a losing fight.

We have also observed that laryngeal diph-

theria is considered less contagious, or infectious, than other types of the disease. I have never seen a second case of diphtheria develop in any child following exposure to one of those cases in which the larynx alone was involved and I have frequently seen other children directly exposed that were not then nor later protected by an immunizing injection of antitoxin. I once saw two little brothers come down with the disease about the same time, only a few hours apart, and the two were given their first doses of antitoxin the same morning, intubed at the same time and quarantined in the same room. There were no other children in that family. In another instance I saw a child showing typical faucial diphtheria, with laryngeal complication, communicate the disease to its father who helped to nurse it. But not once have I seen another child contract diphtheria from one of these fulmination cases of acute obstructive laryngitis that we are taught to call diphtheria. This point, I believe, has its significance.

Attention is attracted by the oft repeated and authoritative statement that 12,000 to 15,000 children die annually in the United States from diphtheria; to which is added the frequent comment, they could have been saved by the timely use of antitoxin. It is assumed that these figures are compiled from the certificates of death recorded in each of the States, giving diphtheria as the cause. It follows then that they include the several deaths that I have so reported and also those that each of you, gentlemen, may have reported from the same cause. I am sure none of my cases has ever died without having had antitoxin, but all of them that died have died in spite of antitoxin in large doses and in some instances when it had been given within twenty-four hours from the onset. Perhaps some or all of you who see these cases have had a similar experience.

What is the explanation of this failure? Why does antitoxin not have prompt effect and produce the same rapid disappearance of symptoms that follows its use in other types of the disease? As a specific, antitoxin for diphtheria has no counterpart in therapeutics; not even in quinine for malaria nor mercury for syphilis; it is the one remedy par excellence, provided it is given early; its advent constitutes one of the most brilliant chapters in modern medicine. And yet, I have witnessed

such dire failure to get results in these so-called cases of laryngeal diphtheria, notwithstanding early and large dosage, that I am persuaded that death results, not from full and timely use nor from inferior and impotent serum, but from an infection, not due to the Klebs-Löffler bacillus, and one over which diphtheria antitoxin exerts no control. In my judgment, it is an error, in the absence of positive proof, to regard as diphtheria all cases of acute obstructive laryngitis in children with rapid prostration and severe toxemia, and then rely upon antitoxin alone to save them; it will not do it. Until we recognize this as true and have regard for the presence of other deadly organisms as etiological factors, either in combination or alone, we will continue to lose many of our patients and the statistical figures will remain high, notwithstanding the assertion they can be reduced by the unfailing use of antitoxin.

We know the streptococcus is sometimes the responsible agent in acute inflammatory affections involving other portions of the respiratory tract and we have no reason to believe the larynx possesses any immunity and is not also invaded by it, but reference to it in text books on children is so slight that it fails to enlighten. It is frequently mentioned as a cause of tonsillitis which may be confused with diphtheria. Kerley says, "Both the streptococcus and staphylococcus will produce a membrane identical with those produced by the Klebs-Löffler bacillus and may be differentiated only through cultural examination." He precedes that statement with the remark: "The man is yet to be born who can say, after inspection alone, that a given membrane is not due to the Klebs-Löffler bacillus." I take this to mean also that the reverse is true and without a culture we cannot know with which organism we are dealing. The failure of antitoxin as a therapeutic test should convince us that it is not the Klebs-Löffler.

Such repeated failure resulting in the death of little ones has prompted me to independent thinking and an effort to seek and find the remedy. The success attained so far, while signal, is limited to too few cases to be accepted as in any way conclusive, but with the hope that my experience, though small, may help others to save life, I offer it, regardless of whatever theories to which it may run counter and with indifference to the taunt of empiri-

cism. I believe we have been confusing streptococcal infections of the larynx with diphtheria and that the two occur in children separately as distinct clinical entities and sometimes in combination.

The following cases, seen during the fall months just passed, are given to illustrate in part the basis of these observations.

CASE I: (Seen by the courtesy of Dr. Sam Wilson.) Girl, age 13 months, showing signs of indisposition throughout the day, was put to bed fretful and unwell. By 3 a. m. condition was so much worse the doctor was called. He found patient showing marked prostration, with rising temperature, rapid pulse and stridulous breathing. No visible membrane in the throat. He began the administration of antitoxin and gave 90,000 units that morning. On account of beginning cyanosis, called me at 10 a. m. to intubate. The tube was readily placed and completely relieved dyspnea. No abatement was observed in the progress of the disease and the child died the afternoon of the following day, some thirty-six hours after receiving antitoxin.

CASE II: (Courtesy of Dr. Wilson.) Girl, age 3 years, showed typical faucial diphtheria with visible membrane and laryngeal complication, indicated by hoarseness, stridor and characteristic cough. Antitoxin was given promptly and dosage increased to 110,000 units. The question of intubation was raised on account of difficult breathing, but not deemed necessary. In twenty-four hours improvement was apparent and continued to complete and prompt recovery.

CASE III: Girl, age 7 years, of delicate constitution, had been under treatment for several days for digestive disturbance. I was called one Tuesday afternoon and found typical pharyngeal diphtheria with extensive false membrane and severe laryngeal complication. This had been recognized and 25,000 units of antitoxin already given. I intubed immediately to relieve most distressing dyspnea with cyanosis and injected an additional 10,000 units. Two days later, on Thursday evening, the false membrane had disappeared from the pharynx, giving impression that the infection was controlled, but prostration continued to increase and the child died the next morning from exhaustion and dilated heart.

CASE IV: (Courtesy of Dr. Sam Wilson.)

Boy, age 14 months, became indisposed on Thursday and was seen the next day by a physician who prescribed for a sore throat. Saturday the child appeared so well as seemingly to have recovered, but at 12 o'clock that night was taken with a severe croup that continued to grow worse. Dr. Wilson was called at 6:30 Sunday morning, made a diagnosis of laryngeal diphtheria and began use of antitoxin. He gave up to 90,000 units. Called me at 9 o'clock to intube. The patient was then cyanotic and breathing with great difficulty, from which the tube afforded complete relief and color returned to normal, but prostration, temperature and pulse rate steadily increased and Monday morning condition appeared hopeless. At my suggestion a mixed stock vaccine, one-half c.c. streptococci and staphylococci combined, was injected. In twelve hours improvement was marked and a second dose of the same given. Tuesday morning, the progress of recovery had been so rapid the child was considered as out of danger and the end of the fifth day the tube was removed and case dismissed. This experience impressed us as most unusual as neither of us had before seen a case so ill as this recover.

CASE V: (Courtesy of Dr. Sam Wilson.) Girl, age 16 months. Dr. Wilson had treated this child for a persistent coryza which he had pronounced cured three days previously, when at 3 o'clock one morning the child was awakened with a sudden and violent croup that responded to no home remedies. Dr. Wilson was called by 7 o'clock and found severe prostration, rapid pulse, temperature 104°, and supra- and infra-clavicular spaces receding with each labored inspiration. Sixty thousand units of antitoxin were given by 12 o'clock noon. At 4 p. m. dyspnea had increased with beginning cyanosis and one c.c. streptococcus vaccine combined was injected at 5:30 p. m. I was called to intube that evening. It afforded prompt relief of dyspnea and the following morning a second dose of vaccine, one-half c.c., was given. Rapid improvement followed and the child made a good recovery.

Sherman's Vaccine No. 10 was used in these cases. Its potency was especially recommended to me by Dr. W. S. Ferguson, of Lynchburg, Va.

DISCUSSION.

Dr. C. S. Dodd, Petersburg:—Laryngeal cases are interesting to me. We have seen several of these patients recently and recall three whose throats were absolutely negative and yet with every symptom of obstruction. Examination of the larynx showed diphtheritic membrane. In one case there was marked depression but examination of the pharynx and larynx showed nothing. The bronchoscope was used and membrane found on trachea proved to be positive. Twenty thousand units of antitoxin were given twice and patient recovered. In one case, we used antitoxin and general treatment but still lost patient.

Dr. J. R. Gorman, Lynchburg:—In connection with the large doses of antitoxin, I recently read an article in the Journal of the American Medical Association, by Park, a member of the staff of the Willard Parker Hospital and one of the best informed men in this line of work in New York City. In a table in this paper, he shows that the dosage he gives in late, severe cases is 20,000 to 25,000 units of antitoxin, subcutaneously, and larger, depending on the patient. If used intravenously, he reduces this dose to one-half. In early mild cases, he gives from 1,500 to 3,000 units, the larger dosage being given subcutaneously, the smaller intravenously. In severe, late cases, I use 10,000 to 15,000 units intravenously.

Dr. Tompkins, closing the discussion:—With reference to the dosage of antitoxin, the large doses to which I referred in my paper were given by another doctor. The largest I have given is 35,000 units, and less than that when given intravenously.

ELEPHANTIASIS AND THE KONDOLEON OPERATION*

By THOMAS M. GREEN, M. D., F. A. C. S., Wilmington, N. C.

Elephantiasis and elephantoid conditions are brought about by the mechanical obstruction of the lymphatics or veins of the dependent part added to which is associated the presence of micro-organisms, whether it be a filaria-nocturna or the streptococci. In certain tropical countries the hypertrophy and fibromatosis of the hypoderm is brought about, no doubt, most frequently by the filaria, but in the Gulf and South Atlantic States we find the streptococci the exciting cause. According to Matas¹, the histopathological elements necessary to complete the picture of elephantiasis are:—(1) a mechanical obstruction or blockade of the veins and lymphatics of the region, usually an obliterative thrombo-phlebitis, lymphangitis or adenitis; (2) hyperplasia of the collagenous connective tissue of the hypoderm; (3) gradual disappearance of the elastic fibers of the skin; (4) the existence of a coagulable dropsy or hard lymph edema; and (5) a chronic reticular lymphangitis caused by the

*Read at the meeting of the Tri-State Medical Association of the Carolinas and Virginia, in Spartanburg, S. C., February 16 and 17, 1921.

secondary and repeated invasion of pathological micro-organisms usually of the streptococcal type. With this viewpoint of its pathology we can lay aside all of the old ideas of tropical types, streptococcal type, etc.

This better understanding of its pathology has led us more nearly than ever to the prospects of curing these unfortunates through the medium of an operation, which has been credited to Kondoleon² of Athens, Greece, who first published his method in 1912. The oldest surgical treatment suggested for elephanti-

ever, satisfactory. The idea of establishing a lymphatic communication between the disease and normal area seems not to have been original with Kondoleon, for in 1908 we find Sampson Handley³ published his method known as "Lymphangioplasty," which consisted of passing long threads from the diseased area to healthy areas with the hope and expectation of establishing new lymphatic channels along the lines of these silk or linen threads. This has been practiced much throughout the civilized world, not only for



Fig. 1—Rosenow's case before operation

asis was that proposed by Carnochan in 1851, which consisted in the ligation of the main artery of the limb, the femoral or external iliac with a view of diminishing the edema. Next came the method of excising wedge-shaped areas by Mikulicz, Von Eiselsberg, Kaposi and others, none of which were, how-

ever, satisfactory. The idea of establishing a lymphatic communication between the disease and normal area seems not to have been original with Kondoleon, for in 1908 we find Sampson Handley³ published his method known as "Lymphangioplasty," which consisted of passing long threads from the diseased area to healthy areas with the hope and expectation of establishing new lymphatic channels along the lines of these silk or linen threads. This has been practiced much throughout the civilized world, not only for

of gravity, as well as the fibrous constriction forming about these newly formed lymphatic tubes, defeated their object and ultimately caused them to become fibrous bands. Finally, Handley⁶ himself concludes that his procedure was not applicable to elephantiasis in his Hunterian Lecture on the Surgery of the Lymphatic System.

Lanz⁷, in 1906, attempted to establish drainage from the edematous area to healthy tissue by a long incision through the skin and fascia lata (which acts as a shelf between the superficial and deep lymphatics) by planting pedunculated strips of this fascia lata into trephined openings in the femur. In addition, many smaller openings were made in the fascia lata. Oppel⁸ and Rosenow⁹ also contributed to this idea of draining by planting flaps of the fascia lata into the deep muscles and extended their operation to the lower limb as well as to the thigh.

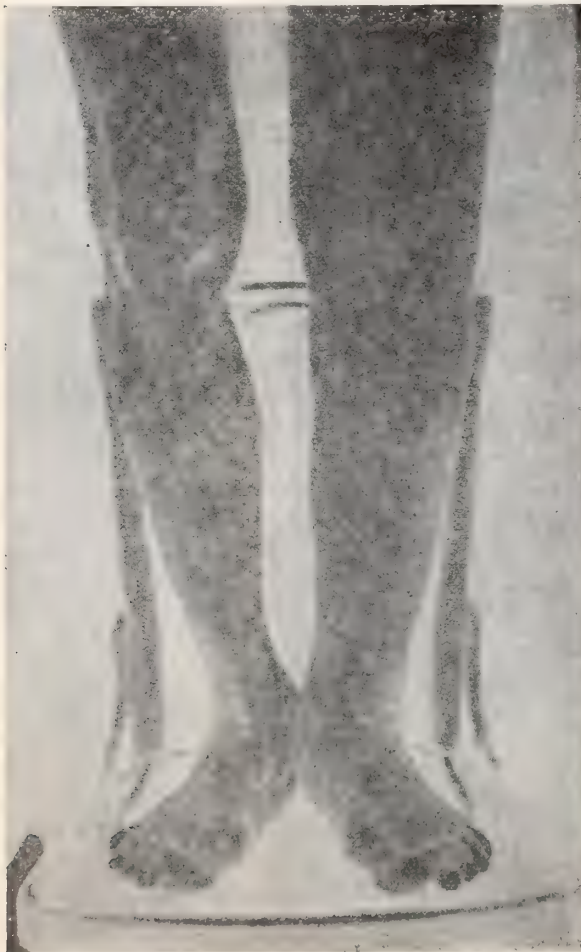


Fig. 2.—Rosenow's case after operation.

Evolving his ideas then evidently from those whose efforts had preceded his, but with the same fixed purpose to establish a lymphatic communication between the healthy infra-aponeurotic tissue and the diseased obstruction and hypertrophied supra-aponeurotic tissues, Kondoleon excised a large strip of the fascia lata throughout the diseased area and stitched the edges of the aponeurosis to the underlying muscle with most gratifying results. That scar tissue will form in this gap is obvious, but the newly forming, anastomosing, lymphatics and veins will establish themselves so abundantly and quickly in so large an area that they seem to resist this constricting influence. This he first reported in 1912 and later in 1915. In 1913 Matas and Gessner reported this operation, being the first to perform it in America. Later Royster¹⁰, Hill¹¹, Barber¹², Moschowitz¹³ and Sistrunk¹⁴ reported success with it. Sistrunk's¹⁵ large experience with it in the Mayo clinic has added much to its refinement.

CASE:—Mrs. M., presented herself on April 18th, 1919, with elephantiasis of the right limb. Was born at Swansboro, Georgia, in 1894, and lived there until 18 years of age, when she moved with her family to Savannah. The swelling of the limb began when she was 17 years old. She was married when she was 15. Had a severe childbirth with pelvic infection and milk-leg at 17. Since then the limb has gradually become larger. During this period of 8 years she has had several attacks of elephantiasis fever, at which time there was an erysipelatous eruption with sudden onset of chill, fever and aching throughout the body. When she was 20 she had a laparotomy done and both tubes removed for a pelvic inflammatory condition. At the age of 21 she was examined for the filaria and she said it was found by one of the interns in one of the Savannah hospitals. A careful study of the blood a few months later was negative, as was also our own investigation. In January, 1918, silk threads were passed from the skin down through the deep fascia and out, numbers of these being inserted as setons from the ankle to the hip with the hope of relieving the lymphadenoma. This was after the method described by Handley in 1908 and which he himself has since abandoned. The scars of this procedure can be seen in the photographic plate. It failed absolutely to relieve her.

Family History. She came of normal par-



Fig. 3.—Showing amount of skin excised from outer aspect of limb.

ents. Father died of valvular heart disease at the age of 56. Mother living and healthy, age 55. Three sisters and three brothers living and healthy. One sister died of childbirth. During childhood she had measles, mumps, chicken-pox and whooping-cough. Vaccinated against small-pox. No hookworm infection. Menstruation established at 13. Suffered dysmenorrhea constantly until birth of the child.

Physical Examination. Stout blond, age 25 years; weight 148; height 5 ft., 4 in. Skin, mucous membrane, nose, throat and reflexes normal. Had Riggs's disease badly several years ago, but apparently cured. Chest and abdomen negative. Extremities, right limb much enlarged. Measurements: Thigh 26 inches; above knee, 22 inches; at the middle of the calf, 20 inches, and the ankle 11 inches.

Blood. Smears for filaria negative (through

several night's study). No malaria parasites. Haemoglobin, 85%. Differential count shows: Polys 73%, Lympho 25%, Eosinophiles 2%; W. B. count 13,000; R. B. count 5,000,000. Stool examination negative. Blood Wassermann, negative.

Operation. Under ether anaesthesia, 1 hour and 40 minutes. Two incisions were made from the trochanter major to the external malleolus. (After Kondoleon's method with modification by Sistrunk). These incisions each began at the trochanter and diverged in the thigh until they were a distance of 10 c.m. apart, approaching each other slightly again at the lateral aspect of the knee to a distance of 6 c.m. apart and then diverging again to a distance of 10 c.m. apart at the center of the fore-leg; gradually converging again to meet at the external malleolus (See Figures 3 and 4).



Fig. 4.—Showing amount of skin excised from inner aspect of limb.

The subcutaneous tissue at the edges of the skin incisions was undercut for a distance of 4 c.m. and the skin flaps held back. When the fascia lata was reached, a strip of it was removed about 6 c.m. wide throughout the entire length of the incision.

Patient, however, was very anemic and developed a double pyelitis and a diarrhoea during her convalescence, which protracted it. The pyelitis was readily relieved by washing the renal pelvis with silver nitrate solution 1%. The diarrhoea was found to be due to gastric

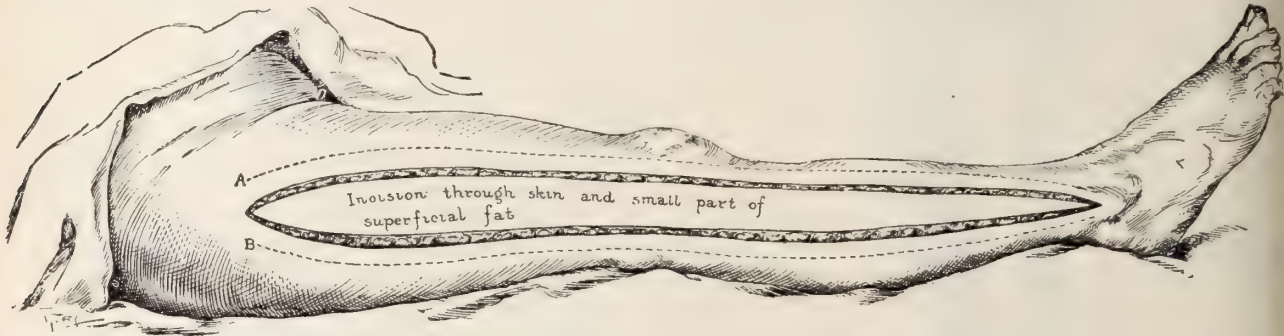


Fig. 5.—Incision used on the outer surface of the thigh and leg. Dotted lines A and B show extent to which the skin is reflected for the removal of subcutaneous fat.

This mass, consisting of skin, subcutaneous tissue and fascia lata, was removed enbloc. In Kondoleon's original operation, no skin was removed. It is of a great deal of advantage, however, as Sistrunk has shown, to remove about the same amount of skin as one does of the superficial fascia in order that there will be no redundancy of the skin. The skin edges were approximated and sutured after careful haemostasis. A similar flap was removed from the inner aspect of the limb from the trochanter minor to the internal malleolus, except that it was of smaller dimensions. The gross weight of the tissue removed was 6 pounds. Patient showed quite a little shock after operation, but reacted nicely. Both incisions healed by primary union.

anacidity and disappeared under large doses of hydrochloric acid, diluted and taken with each meal. For the first three weeks of her convalescence, 10 c.c. doses of antistreptococcic serum were administered at 3-day intervals. The limb was bandaged daily before arising with an elastic bandage. She was told to continue this for 3 or 4 months after operation. She was discharged on August 5th, 1919, in good condition.

The change in the appearance of the limb was astonishing within a week after the operation. In that portion of the limb not reached by the incision the oedema lost its hard, brawny feeling at once and resembled that of an ordinary varicose limb, subsiding very rapidly after the first week to a normal aspect,

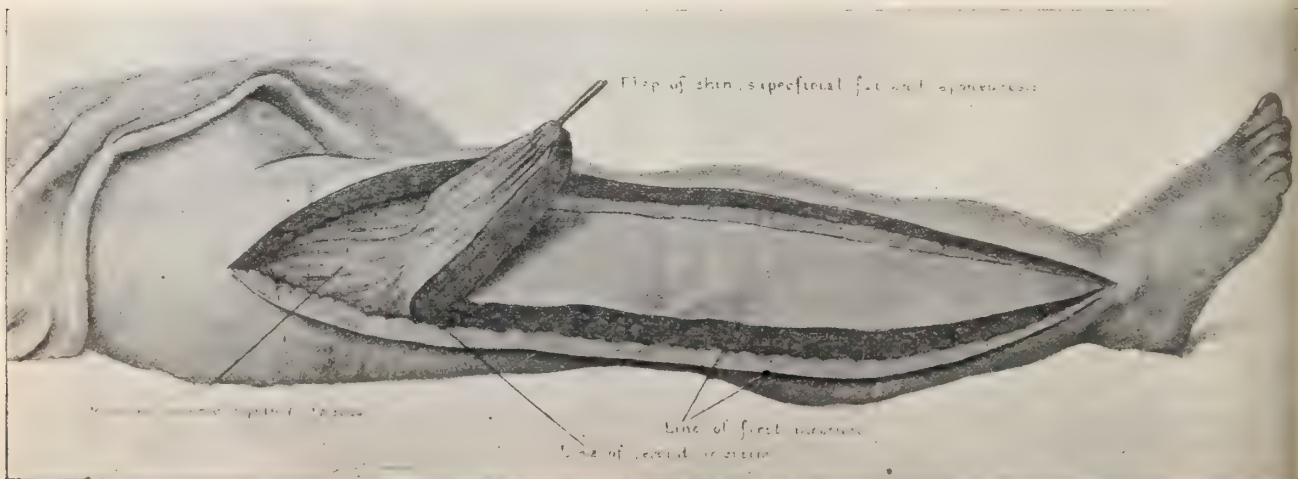


Fig. 6.—Skin, a large amount of subcutaneous fat, and aponeurosis removed in one piece.

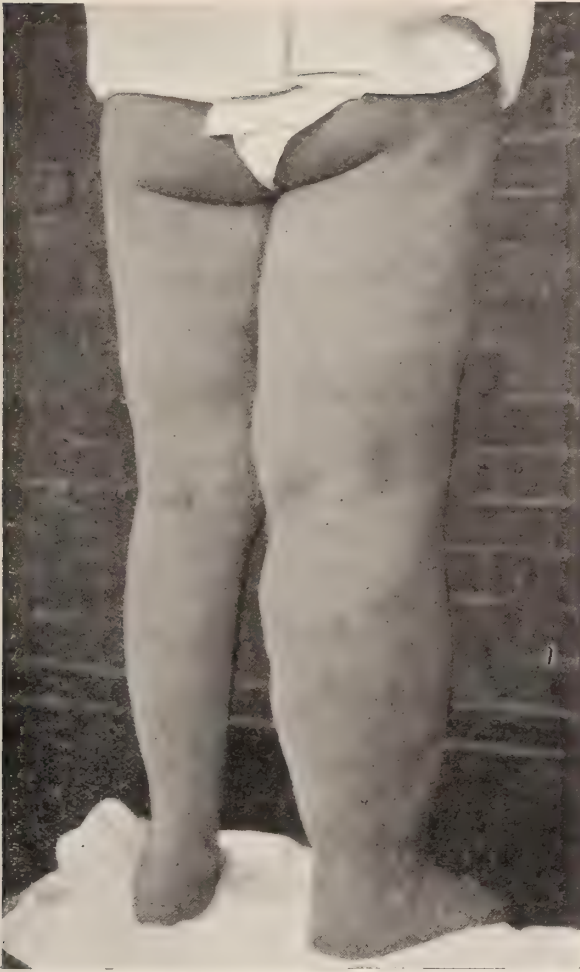


Fig. 7.—Before operation.

with very little pitting on pressure. There was oedema, of course, when the patient began to walk about.

Elephantiasis when due to a filaria infection is always due to the presence of the filarial *Bancroftii*, the embryos of which appear in the blood stream during the sleeping hours, whether one sleeps during the day or night. During the waking hours they seem to congregate in the large vessel in the neighborhood of the lung, the reason for which has never been explained. The mature filaria generally remain in the lymphatic channels or glands. There are about nineteen other different types of filaria. The only other one which is of interest is the filaria loa or diurna, which makes its appearance in the blood stream during the day only, regardless of whether the individual sleeps or is awake. This produces the circumscribed localized swelling of the scrotum,

breast, eyelids, tongue, and is known as the calabar swelling. The intermediary host of the filaria *Bancroftii* is the mosquito, the principal types of which are the *Stegomyia pseudo-Scutellaris* and the *Culex fatigans*. The intermediary host of the filaria loa or diurna is the mango fly.

Distribution of the filaria *Bancroftii* is rather diffuse, being largely distributed in India, Africa, South America, and to a certain extent in the southern United States. Charleston, South Carolina, has been known as a hot bed for elephantiasis. Johnson found that 19% of 400 people examined had filaria embryos in the blood. However, it must be remembered that only about 5% of the individuals showing filaria embryos in the blood ever develop elephantiasis and 90% of these infections are in the lower extremities.

Patients with marked elephantiasis show no



Fig. 8.—Before operation.



Fig. 9.—After operation.

filarial embryos in the blood. This leads us to the theory expressed by Matas in his classic, viz., that elephantiasis can be produced by repeated attacks of erysipelas without the presence of the filaria. Wellman, in West Africa; LeDantec, in French Guiana, and Tront, in Sierra Leone and the Congo, found no filaria present in the blood of many cases of elephantiasis, where conditions were most favorable for its presence, especially on account of the nakedness of the natives, this subjecting them more to trauma of the lower extremities and exposing them more to the bite of insects. Low maintained that lymphedema will remain such as long as no secondary infection with streptococci supervenes and that when it does occur the lymphangitis and fibromatosis which results in elephantiasis are due to the death of the filaria embryos and their disorganization. These erysipelatos attacks are referred to as

elephantiasis fever and are repeated during the course of the disease, the condition becoming more marked after each. The streptococcus of erysipelas, or Fehleisen, has been isolated from elephantiasis repeatedly. Bancroft claims that 25% of native Fijians with elephantiasis show no filaria in the blood, so the presence of the streptococcus with the filaria *Bancroftii* would seem necessary to bring about the fibromatosis and lymphangitis necessary to produce the condition of elephantiasis.

The improvement of the circulation to the diseased part through the Kondoleon operation will enable us to make better use of remedies directed toward the extermination of embryos and adult filaria. Whether if let alone these people ever develop elephantiasis in other parts, I am unable to determine but, that they are still a source of danger to others through the mosquito, seems reasonable. Sal-



Fig. 10.—After operation.

varsan has been very unsuccessful, but I can find no record of a case having been treated with it after the Kondoleon procedure.

The greatest promise seems to come from the London School of Tropical Medicine where the followers of Sir Patrick Manson, especially that wizard of parasitology Sambon, have found that antimony intravenously has proven so effectual in parasitic diseases. It is considered a specific in kala-azar and, in no less a degree, in schistosomiasis or bilharziasis. In the sleeping sickness, the results have already shown great promise. Why not in elephantiasis after the Kondoleon operation?

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MIGRAINOUS AND PITUITARY HEAD-ACHES CONTRASTED.

By J. ALLISON HODGES, M. D., F. A. C. P., Richmond, Va.

Headache is the most common of all nervous symptoms, and no symptom requires more careful investigation as to its etiology, for the diagnosis is always to be made, not of this symptom, but of its basic cause.

Headache, then, is not a disease, but merely a symptom, and great care should be exercised to distinguish between functional disturbance on the one hand, and organic intracranial processes on the other, which may be the causative agents in the production of this symptom.

For our present consideration, we will briefly contrast migrainous and pituitary head-

aches, for both are grave as to their prognosis, and uncertain as to their cure, unless early recognized, and properly classified.

This brief contrast of the characteristics of a "symptom", present in both a functional and in an organic nerve condition, is offered for its suggestive purposes, and to arouse scientific interest in earlier diagnosis of such cases by the profession.

1. FREQUENCY:—The migrainous type of headache is more frequent than the pituitary, for, generally speaking, most of the persistently recurrent headaches are of migrainous origin.

2. LOCATION:—The migrainous headache is generally unilateral, sometimes occipital, while the pituitary, is frontal, fronto-occipital, or bi-temporal, especially.

3. CHARACTER OF PAIN:—The migrainous headache is pulsating, throbbing and paroxysmal; the pituitary is constrictive, squeezing and persistent.

4. DURATION:—The migrainous headache is quasi-periodical, occurring at intervals of days or weeks, and lasting six to twenty-four hours, the patient, between attacks, being entirely free of local pains, and, after attacks, apparently better than before the attack, while in pituitary cases, there is no periodicity, the average patient suffering more or less constantly all the time.

5. SEX OCCURENCE:—Migrainous headaches occur oftener in women than in men, in the proportion of about three to one; while the pituitary, though showing about the same proportion in the sexes, is of less frequent occurrence numerically.

6. CONSTITUTIONAL TYPE:—Migrainous headaches occur in neurotic patients and families, and there is very often a history of direct inheritance; pituitary headaches have no heredity, and occur invariably in patients with pituitary dysfunction and the classical pituitary signs, such as abnormalities in body hair, too much or too little, irregularities of the teeth, certain changes in bodily bone development, and increased sugar tolerance, and other disturbances of nutrition, such as adiposity and changes in secondary sexual characters forming the Frölich syndrome.

7. ASSOCIATED SYMPTOMS:—In both migrainous and pituitary headaches, there are associated with the localized pain, two com-

mon symptoms, namely, nausea and vomiting, but these are more frequent in the former, and generally terminate each paroxysm, while they are not in evidence in the latter generally, until the cases have continued for a long time.

Migrainous headaches are often, also, accompanied by dimness of vision, by flashes of light, or by dark or light spots, variously colored, floating before the eyes, and sometimes by a temporary total hemianopia, but pituitary headaches are never preceded nor accompanied by a visual aura in the form of a scintillating scotoma, though, in the case of pituitary tumor, there may be permanent bitemporal hemianopia.

Also, while vertigo, tinnitus aurium, confusion of ideas, disturbances of memory, etc., are not uncommon in migrainous headaches, these associated symptoms are entirely lacking in pituitary headaches, and choked disc is absent in both migrainous and pituitary headaches.

The systolic blood pressure is also generally increased in migrainous headaches, especially at the time of the attack, while in pituitary headaches it is uniformly low.

8. **PATHOLOGY:**—The most plausible theory for the causation of migrainous headache, there being no morbid anatomical changes, is that it is, in large measure, a fulgurating neurosis, having its site in the cerebral cortex, or possibly in the primary sensory centres, from which there are periodical discharges of nerve force, and that these are precipitated by the presence of an excess of some endogenous toxin in the intestinal tract. On the other hand, pituitary headache is not the result of such functional disturbance, but is due to anatomical abnormalities which in part interfere with the proper functionation of the pituitary gland, this type of headache being due to an altered secretion of the pituitary, which causes swelling and consequent permanent enlargement of the gland. Whether this enlargement is caused by some compensatory demand upon this gland, because of dysfunction of the thyroid or suprarenal glands, or the insufficiency of the adrenals, is not definitely known, but the fact remains that the pituitary gland in many cases does enlarge and, because of its anatomical position and consequent constriction in a bony enclosure, especially when the

clinoid processes are abnormal, or the fossa is limited in size, and sufficient space is not allowed, except laterally, for this new growth to expand, consequently, there must arise pressure symptoms and resultant localized pain.

9. **THERAPEUTIC RESPONSE:**—Migrainous headaches are rebellious to a degree to all treatment, whether symptomatic or constitutional, while pituitary headaches, in properly selected patients, are uniformly responsive to glandular therapy in proper dosage, usually 2 grains of the pituitary extract, administered four hours after meals, and continued over a long period, and increased or decreased according to developments in the individual case.

10. **SUMMARY:**—Of the two types of headache now being considered, the migrainous is the result of a constitutional neurosis; the pituitary is the result, physiological in part and in part pathological, of enlargement of the pituitary gland, situated, as it is, in bony and unyielding walls which do not allow symmetrical development, and, consequently, pressure symptoms are produced.

Migrainous headaches occur paroxysmally in neurotic individuals, often with a history of direct heredity, and at any time of life, and are congestive in type, and characterized by periodical attacks of pain, continuing for variable periods in the course of the fifth nerve, and often associated with nausea or vomiting and various vasomotor disturbances, which are intractable to treatment.

Pituitary headaches are localized and persistent in type, and occur in patients showing the clinical dyspituitary disorders named above and, because of dysfunction of the pituitary gland in these patients, there occur pressure symptoms of headache, vertigo and vomiting, which are usually relieved by continuous and proper glandular feeding.

The prognosis in migrainous headache is uncertain and discouraging and generally irresponsible to any treatment before a patient is forty years of age. After approximately that age, there may be improvement or sometimes, spontaneous recovery, while in pituitary headache, the prognosis is favorable and satisfactory, if treated early by appropriate glandular extract.

107 East Franklin Street.

URETERAL STRICTURE.

(In the Female).*

By R. L. RHODES, A. B., M. D., F. A. C. S., Augusta, Ga.

The occurrence of Ureteral Stricture as a definite clinical and pathologic entity is no longer questioned but a generally accepted fact and, therefore, it is not necessary to repeat or review evidence to substantiate same.

In the ETIOLOGY, the leading role is no doubt played by focal infection, which may be quite remote, such as tonsils, teeth, paranasal sinuses, the alimentary tract, etc. Old infections of the urinary tract and intra-abdominal inflammatory processes or adhesions incident thereto, possibly play a factor in a small percentage of cases. It is conceivable that an old pyelitis persisting from infancy or childhood, more or less intermittent in its manifestations, may ultimately lead to stricture formation in the ureters in a manner somewhat analogous to the formation of strictures of the urethra as a result of chronic gonorrhoea.

COMPLICATIONS. Various degrees of hydronephrosis, pyelitis, pyelonephritis, etc., may be found in association with ureteral strictures and, in a measure, represent rather the duration or stage of the process. For instance, hydronephrosis develops inevitably from stagnation and damming back incident to the obstructed ureter and infection is sooner or later superimposed. Occasionally, however, one meets with an associated pyelitis and only a negligible dilatation of the renal pelvis. Given then, a hydronephrosis with infection, pyelonephrosis, pyelonephritis, etc., very largely represent the further degree of development of the process which may lead even to abscess of the kidney or destruction of practically the entire kidney or possibly the deposition of renal calculi. Two such cases have been observed and will be reported, subject to the criticism, that the Roentgen ray is not infallible but, since stones were subsequently shown and even "sandy deposits" and confirmed at operation, it seems reasonable to presume that they were not present at the time of the former pictures and especially in that good detail otherwise obtained.

SYMPTOMS AND DIAGNOSIS. There is pain in the right, left or both sides of the abdomen, as the case may be, low down, just above the pubes,

more central than the typical ovarian pain and yet more lateral than the typical uterine pain. It may be dull aching, and constant or remittent, and colicky or sharp, and cutting in type. Usually present, to a greater or less degree, is frequency of micturition, both day and night. During the acute or sub-acute exacerbations (and such nearly always occur in association with the menstrual period), these may be more pronounced but, even in the chronic or silent stage, in so far as pain is concerned, there is most often some increased desire to void and nocturia, once to several times each night. I consider a history of nocturia in itself, certainly when as often as two to three times each night, a definite indication to look further into the urinary tract for trouble and it is seldom that a cause for same cannot be located even though no more than a mild chronic trigonitis. With severe blockage and marked damming back, the enlarged kidney may, of course, be palpated but such degrees are so obvious as to be passed in this discussion. So, too, tuberculosis of the kidneys or ureters, or strictures resulting therefrom, have no part in this, since it represents an entirely different classification and method of treatment.

An incidental finding in these cases is excessive, prolonged and painful menstruation without other demonstrable cause and this has disappeared with the relief obtained from the strictures and renal infection. In fact, since its first observaton, I have constantly obtained such a history with but one exception and, therefore, the temptation to include ureteral stricture as one of the causes of menorrhagia and dysmenorrhoea—doubtless explained by the increased pelvic congestion.

The cardinal features in the diagnosis of this class of cases that I would emphasize are the old findings, which I believe were first ascribed to tuberculosis and found rather constantly, but known now to be present in other chronic lesions of the kidneys and ureters, namely, thickened cord-like ureters, especially of the lower ends for a distance of three to six or seven or more centimeters from their entrance into the bladder; and the sensation of a desire to void as one palpates or rolls these thickened ureters. In the routine pelvic examination the bladder and lower ends of the ureters should be examined before the uterus

*Read at the twenty-third annual meeting of the Tri-State Medical Association, in Spartanburg, S. C., February 16-17, 1921.

is bimanually palpated, firstly, to determine any lesion of them and, secondly, to not be misled by the pain or sensitiveness produced in them, should they be diseased, in the act of palpation of the uterus and tubes, since pressure of these against inflamed ureters will produce pain and this naturally would be attributed to the tube, if the ureter has not been previously ruled out. Not infrequently, the patient will at once and positively identify the pain produced by palpation of the ureter as that from which she suffers. The other cardinal finding is the desire to void incident to the palpation or rolling of the ureters. Not infrequently this is so pronounced that she will void involuntarily; more frequently, however, she will complain of the desire to void and ask that the examination be interrupted for same or, in a fewer, this will be elicited only upon direct inquiry. As said concerning nocturia, so also as regards these two findings, they have never failed to indicate some lesion in the urinary tract and borne out upon further search for same. Of course, the actual proof is obtained by cystoscopic examination, meeting the obstruction on attempt to pass the ureteral catheter, the frequent necessity to change to a much smaller one, again, the positive identity by the patient of the pain as the catheter engages the stricture. Roentgenograms, after injection of thorium or sodium bromide into the renal pelvis, show not only a dilated pelvis but a dilated ureter down to the location of the stricture. Further proof is found in the complete relief from symptoms subsequent to dilatation of the stricture and cure of the renal infection.

TREATMENT. There should be gradual and progressive dilatation of the strictures by means of wax bulbs placed upon the ureteral catheter or the equivalent with bougies or some other means. For the infection, lavage of the renal pelvis has given me far more satisfactory results than any other form of treatment and, until recently, silver nitrate was the antiseptic of choice but, since the introduction of mercuriochrome-220, I have had as good or better results; certainly it has proven effectual in one case after silver nitrate, even in 10 per cent. solution, had failed. The focus of infection should, of course, be located, if possible, and removed and is next in importance to the cure of strictures since, without its elimina-

tion, there will frequently be a recurrence.

CASE 1. S. P., age 32 years. Stricture without complication. She had a severe attack of typhoid fever as a child. Menstrual history negative until present illness. Married at 16 years, gave birth to a child one year later, normal delivery and puerperium. Separated from her husband two years later. She has never had tonsillitis but teeth and gums have been bad and only recently corrected. Present complaint dates back about ten years and began with pain in the right lower abdomen, constant but with exacerbations of several days' duration, these are associated with the marked frequency of micturition, as often as every half hour. Some frequency and nocturia, two to three times each night, are present all the time but never any dysuria. Menses have increased in quantity until at present they are quite excessive and associated with some pain. Two years previously she was subjected to operation because of the pain and the excessive menstruation. This, she says, was an appendectomy, suspension of the uterus, and the removal of "all of one ovary and part of the other." No improvement followed. She was then advised that "everything be taken out," but, before submitting, she sought consultation elsewhere.

Examination was negative except for thickening and tenderness of the right ureter and the desire to void produced by palpation of same. The pain she positively identified as that from which she suffers. Upon cystoscopic examination, a No. 8 catheter engaged the stricture 4 cm. but could not be passed beyond. A No. 6 was then substituted and passed but with appreciable resistance through the stricture and again she identified the location of her pain. Capacity of the renal pelvis 11 cc. Cultures and microscopic examination of the urine were negative. Progressive dilatation of the stricture at intervals of ten days was employed with relief from the pain after the first, and, at the fourth, a wax bulb 4.5 mm. was used which was considered sufficient and at this time the renal pelvis capacity was 8 cc. She has been free from former symptoms for several months.

CASE 2. A. H. M., age 40 years. Bilateral strictures with pyelonephrosis and right renal calculus. She has had pain in lower abdomen, both sides, for about seven years, asso-

ciated with frequency of micturition, nocturia, up to dozen times, and dysuria. She also has dull dragging pains and a sensation of heaviness in the region of both kidneys, never any sharp pains. X-ray report, six years ago, was negative for stones. She was subjected to pelvic operation at this time, without relief; exact nature of this I could not determine.

Examination negative except for presence of the two signs as in the previous case. Cystoscopic examination revealed a diffuse cystitis, strictures of both ureters 4.5 cm. from the orifice, and pyelonephrosis of 56 cc. on the right and 30 cc. on the left. Urine from each kidney showed much detritus, kidney cells of all types and many red blood cells as well as pus. Cultures gave pure colon bacillus. There was a suspicious but not definite scratch on the waxed tip of the catheter from the right kidney. Because of pain incident to the acute cystitis, the bladder alone was treated with instillations for several weeks. Two months later she was again cystoscoped; the bladder was quite improved, and larger catheters passed into the kidney pelves. The capacity of the right was 34 cc. and of the left 18 cc., quite appreciable improvement, as you will note. Several succeeding treatments completed the dilatation of the strictures and pelvic lavages with nitrate of silver destroyed the infections and the capacity of the pelves reduced to 15 cc. each side, the symptoms entirely disappearing. X-ray was then requested because of the suspicious scratches previously obtained but, during the night preceding, she had a typical attack of kidney colic on the right side, which persisted throughout the night and was only partially relieved by opiates. By morning a large mass appeared in the flank, identified as an enlarged kidney. X-ray showed a large stone* in the pelvis of the kidney and a smaller one lodged in the ureter about two inches from the bladder; the latter, aided by bimanual "stripping", was passed after several days, and the acute hydronephrosis promptly disappeared. There was no recurrence of infection in the kidney. I was then called to military service and, upon return, found that a few weeks previously, following a severe "cold," she began to have "uneasy feeling" in the region of the right kidney and some frequency of micturition. Examination revealed a recurrence of the infection, but not of the strictures. This

was readily destroyed by several lavages and the stone removed by pyelotomy with suture of pelvis and closure without drainage. Convalescence was uninterrupted and she has been free from urinary symptoms for nearly two years.

CASE 3. S. R., age 39 years. Left ureteral stricture, pyonephrosis with destruction of kidney substance and stone.

COMPLAINT. Pain over the course of the entire left ureter, but worse over the lower end, in the region of the kidney, and referred over the entire abdomen.

HISTORY. She does not remember the onset, so long has she suffered. Even in early childhood she had attacks very suggestive of pyelitis and says she was treated for "kidney trouble." From 14 to 19 years of age, she had many attacks of pain in the region of the left kidney and ureter with fever for several days. Work, buggy riding or strenuous exercise would precipitate an attack. For these she was treated by hot applications, antikamnia and opiates. More often the attacks subsided gradually but occasionally they were relieved quite suddenly. Since 19 years of age she has not had an acute attack but constant, dull aching pains in the left side, worse at the time of menstruation and, therefore, had been attributed to the ovaries. At times she has been quite run down and forced to give up work. X-ray in 1915 was negative and she was subjected to a pelvic operation from which she experienced no relief or from any other treatment and was recently advised that another pelvic operation was necessary. At present she is drowsy and feels sluggish all the time and sleep is disturbed by nightmares.

Examination yielded results as in the above cases. The stricture was 3.5 cm. from the ureteral orifice. The right kidney was normal in every respect. The left showed a pelvic capacity of 30 cc., and urine literally loaded with pus and kidney cells of all types, many red blood cells and very large bacilli, later identified as *Proteus Vulgaris* in pure culture. The strictures were readily dilated but the infection was quite resistant, failing to yield to silver nitrate even in 10 per cent solution, but the pelvic capacity reduced to 18 cc. X-ray showed a large stone in the pelvis and several small sandy deposits in the lower pole. Believing it advisable to destroy the infection be-

fore operating, various things were tried without success, until mercurochrome-220 in 1 per cent solution, after several lavages, succeeded. At operation, the entire lower half of the kidney was found to be a mere shell, quite necrotic in areas, breaking even under the gentlest manipulation and, therefore, a nephrectomy was done. Convalescence was uninterrupted and she has been free from symptoms about one year.

SUMMARY.

1. The frequent occurrence of ureteral strictures, with or without its several complications.
2. The routine palpation of the bladder and ureter at the beginning of the bimanual examination.
3. In the event of other troubles in the pelvis, the ureteral stricture is the more urgent in the vast majority and should be cured before any operative measures.
4. The importance of the two signs, thickened ureters and the desire to void, produced by the palpation of these.
5. Progressive dilatation of the strictures.
6. Cure of the renal infection.
7. Location of the focus of infection and its removal.

Lamar Building.

RADIUM IN THE TREATMENT OF CANCER OF THE UTERUS.*

By JOS. J. MUNDELL, M. D., F. A. C. S., Washington, D. C.

As with all innovations, not alone in medicine, radium has passed through the usual phases of enthusiasm and condemnation, but, judging from the voluminous literature, its niche in the doctor's armamentarium, if not already established is near at hand.

We in Washington probably have been too close to Baltimore to fully realize until very lately the excellent work that is being done with radium throughout the country. The hopeless case, as a last resort, has been sent to Baltimore, where the patient, according to the patient's testimony, has been promised a cure. The patient returned home and in due course of time the case ended fatally in the usual manner. This state of affairs, existing for the past several years, naturally has created here a strong prejudice against the use of radium. But that good results are being obtained

in the treatment of cancer cannot be denied, for too many eminent and conservative men testify to this.

Your time will not be taken up with the physics of radium, as we are all more concerned in its clinical results.

Radium is said to have a selective action on the cancer cell. The work of Francis Carter Woods and Frederick Prime, of the George Crocker Special Research Fund of Columbia University, and also of James Ewing, is conspicuous along this line. We frequently hear the expression that radium kills the cancer cell. They state that it does not kill the cell directly but that it inhibits the power of the cell to reproduce itself, that is, it limits mitosis and eventually the cell dies. Soon after a lethal dose of radium the nucleus begins to break up and become granular and after a time a shrunken cell membrane is all that remains of the formerly malignant cell and, later, fibrosis occurs. A sublethal dose may have this same result, but its action is slower; but a too small dose will not only not have this action but seems to stimulate the reproductivity of the cell.

For therapeutic purposes cancer may be classified as operable and inoperable, and the inoperable further classified as early, just beyond the border line, and hopeless. When I speak of cancer, I have in mind more particularly cancer of the uterus.

In cancer of the body of the uterus, hysterectomy will produce sixty per cent. or more cures; therefore surgery is indicated here. The reason for this is that cancer of the body is, no doubt, a localized condition for a long time and that metastasis is slower than in cervix cases because in cervix cases cancer spreads by way of the broad ligament, and spreads rapidly, while in fundal cases it spreads by way of the inguinal glands and metastasis is slower. When the inguinal glands are involved, one may feel sure that there is cancer of the body. Then, too, there is added risk in the introduction of radium into the body of the uterus, whose walls are thinned out and ulcerated, for it is very easy to puncture such a uterine wall and set up peritonitis, etc. Therefore, surgery is the treatment of choice.

Regarding the treatment of an operable case of cancer of the cervix, the consensus of opinion at present is that such a case should

*Read before the District of Columbia Medical Society, February 16, 1921.

have a pan-hysterectomy, and that it should be radiumized after operation. If the theory of the action of radium upon the cancer cell, as stated before, is true, then the radiumizing of these cases is logical. Stress is laid upon the *present* consensus of opinion regarding these cases because there are some men, and they are not looked upon as ultra radicals either, who hold the belief that within five years all cases of cancer of the cervix will have been taken out of the realm of surgery. However, the writer has not as yet become sufficiently "hipped" upon the subject to subscribe to this view.

Probably the most brilliant result obtained with radium is in the same type of case in which surgery is successful, namely in the early operable case, but in which there is a concomitant complication, such as cardio-renal disease, lung condition, etc., which would bar the administration of an anesthetic. Here radium steps in and does wonderful work without risk.

During the past five years at the London Radium Institute, in the cases that have been radiumized before and after operation, recurrences have been less than twenty per cent.

This brings us to the question, when is a case inoperable?

There are four cardinal symptoms that may be said to establish a criterion. A case is inoperable when there is:

1. Involvement of the vaginal mucous membrane;
2. Involvement of the broad ligaments;
3. Lateral immobility of the fundus;
4. Fixation of the cervix.

If one or more of these symptoms are present, the case is inoperable.

The next most favorable type is the case just over the borderline of operability presenting one or more of the symptoms just mentioned. If the skeptic says he has not seen any good results from radium, how many here tonight can recount many, if any, cures brought about by surgery in this type of case? Occasionally there may be one, but you all know of and have seen cases in which hysterectomy not only did not cure the patient, but apparently acted as a bellows, as if fanning the fire into a conflagration and hastening the end. The operation indicated in such a case is a Wertheim, and Reuben Petersen is authority for the state-

ment that there are not a great number of men in this country capable of doing a complete and thorough Wertheim. Then too, the dangers attendant upon a Wertheim operation are stupendous; probably thirty-five per cent. of the patients succumb as a result of the operation, even in the hands of skilled operators. In this type of case, radium is the treatment of choice. The testimony of a host of writers, notably John G. Clark, Wm. P. Graves and the Mayos, bears out this statement, for they all have under observation many cases living and enjoying apparently good health two to four years after treatment. In a conversation with John G. Clark last week, he stated that in a series of 400 cases of inoperable cancer of the cervix, he has eighteen per cent. living and apparently in good condition at the end of four years. Compare this with the memories of your patients whom you have seen operated on.

In the advanced inoperable case it is not always wise to use radium. Certainly, a cure should not be expected, for it is not claimed for radium that it is a miracle worker. It is no doubt due to this type of case that radium has received so much of its opprobrium. In the past, such a case, having failed to be benefited by all other methods of treatment, as a last resort was sent for radiation and unfortunately, perhaps, was promised a cure. Treatment of such a case is frequently attended with dire consequences. The tissues being greatly devitalized, application of radium against them for several hours may result in necrosis and the formation of fistula. It is said by many, however, that fistulae do not occur more frequently in treated than in untreated cases of this type. Even though much should not be offered to an advanced case, at times the improvement noted is amazing, the bleeding is checked, the terrible stench is abated, and the general condition of the patient so greatly benefited that she is given a respite and, if only temporarily, she is made comfortable, which is certainly worth while.

One must be careful in the administration of radium for there are certain pitfalls likely to ensnare one, the dangers of which are great. Therefore, one should be sufficiently adept at pelvic examinations to rule out any inflammatory adnexal disease, such as, for instance, old latent pus tubes, which are prone to be lighted

up causing acute salpingitis and peritonitis. Such a complication coming on top of a cancerous condition in an already debilitated patient would, to say the least, be apt to disturb one's equanimity. Therefore, in radium therapy in gynecological conditions, the best results probably are obtained by one who has had some gynecological training.

As to results, it is questionable, except in a few very early operable cases of cancer of the cervix, if the disease is ever entirely eradicated, but, after radium treatment, there are many cases in which we obtain clinical cures,—that is for two, three, or five years the patient is living, apparently in good health, and all evidence of local disease has disappeared. For this we have the testimony of such eminent men as before mentioned and a host of others.

You may have noticed, nowhere in this article has it been stated that radium cures cancer nor have any wild and extravagant claims been made for it, but the effort is made to convey the impression that it does inhibit its growth and retard its progress more efficaciously, except in a very few cases, than does surgery.

It has been stated, and probably correctly, that eighty per cent. of all cases of cancer of the cervix are inoperable when seen by the surgeon. This is not due, as has been stated so frequently, to ignorance or carelessness on the part of the family physician, but because cancer of the cervix is slow in producing symptoms at first. For the first six months of its life it produces no symptoms and during the next six months, often the symptoms being so slight, the patient is deliberating upon consulting her physician, so that in a vast number of cases a whole year has elapsed since the onset of the disease before she is seen by a surgeon and then, of course, deep inroads in the form of metastasis have occurred.

It is also stated, and no doubt correctly, that twenty to twenty-five per cent. of cases operated on are cured. If these statements be true, as evidently they are, it is plain to see that surgery really only cures about five or six per cent of the total number of cases of cancer of the cervix. Compare this, if you will, with Clark's statistics.

The use of radium has brought about this state of affairs, namely: Instead of as heretofore, evident past borderline cases are not

now operated on, thus getting a higher percentage of cures by operating, and as the profession, by reason of radium work, is more alert in detecting cancer, it is hoped that we may see the cases much earlier and, therefore, radium should be looked upon not as a competitor, but as a handmaid to surgery.
1616 Rhode Island Avenue, Northwest.

PYORRHOEA ALVEOLARIS AS AN ETIOLOGICAL FACTOR IN THE NON-RELIEF OF SYMPTOMS AFTER SURGICAL OPERATION.*

By GEORGE H. BUNCH, M. D., Columbia, S. C.

The primary purpose of any Medical Society is to make better doctors of its members. This is accomplished by the presentation of clinical observations and problems and the discussion of them by those present who have had similar problems. In this way, every fellow profits by the experience of the other fellow. It is not the report of the very rare case that is of most benefit to the society. The more common the condition the more good is likely to result from a discussion of its early recognition and proper treatment.

Pyorrhoea Alveolaris is a disease of more than academic interest in South Carolina. Our records show that of 251 white patients over 21 years of age examined and treated surgically by us in 1920, 15 had no teeth or false teeth: 106, or 44.8 per cent. of those with teeth, had pyorrhoea associated with more or less dental decay sufficiently advanced to be recognized at a glance by the physician making the physical examination: 130, or 55.2 per cent. are classified as having good teeth. Of 114 adult negroes, 3 had no teeth; 65, or 47.4 per cent of those with teeth, had pyorrhoea: 82, or 52.6 per cent. had good teeth. Of the total 347 adult patients, 182, or 52.6 per cent. had good teeth: 165, or 47.4 per cent, had pyorrhoea with bad teeth. We find the incidence of pyorrhoea increases with the age of the patient. Children do not often have it. There is more than twice the percentage of poor teeth and infected mouths in those over 40 years of age (65 per cent.) than there is in those between 20 and 30 years of age (30 per cent.) In this series of cases, only gross pathology was noted. We believe that careful ex-

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amination will show almost 90 per cent of our adult patients to have some form of mouth infection.

Pyorrhoea means a flow of pus and pyorrhoea alveolaris is a purulent discharge from the alveolar processes. Although the infecting organism has not been proven and accepted, the condition must be an infection of the pericementum and gums. The pericementum or periodontal membrane lines the hidden portion of the tooth. It only comes to the gum margin and may be considered as the periosteum of the tooth. It differs from periosteum in that the pericementum when destroyed does not regenerate.

Any chronic irritation within the mouth predisposes towards pyorrhoea. Beginning locally, the disease is progressive and ultimately, if treatment is neglected, all the teeth become involved. It never develops about a clean tooth but it is often found about sound teeth. An accumulation of sordes, food debris, mould about a tooth is the food necessary for the development of the organisms which must be often present in every mouth. The gums become tender, swollen and spongy; they are purple in color as if from a venous congestion. In severe cases they bleed easily, from being touched by the examining finger. As the pericementum is involved and destroyed, the gums recede from the teeth. When pressed with the finger, the tissues about the teeth exude a foul pus. The teeth become loosened and, in advanced cases, may fall out. The breath is stinking—no other word expresses its foulness. From the tenderness about the teeth, chewing is at first painful. Later, when the teeth are loose, proper mastication is impossible. The discharging pus is swallowed with the saliva. The patient loses appetite. Nothing tastes right. There is absorption of toxins and the infecting organisms may get in the blood, causing arthritis, endocarditis, nephritis with hypertension, or any of the systemic conditions dependent upon focal infection. Patients with extensive pyorrhoea do not, cannot, feel well. There is a lack of energy, a tendency to headache, to constipation, to backache. They tire easily. They are subnormal. They have a mild secondary anemia and are apt to be sallow.

The disease is often associated with abdominal pathology demanding surgery. Whether this in any way has the relationship of cause

and effect, or whether it is merely a coincidence, we do not know. It is not unreasonable to suppose, however, that pyorrhoea might cause duodenal ulcer, cholecystitis, or appendicitis, either through the blood stream or by direct infection from the swallowed pus. It would be interesting to watch a series of such cases, in which the pyorrhoea has been properly treated, to see if there is improvement in the abdominal pathology from the removal of the focus of infection. We believe that women with it have a tendency toward increased and irregular menstrual flow. We believe that, if there is local pathology in the pelvis to cause uterine bleeding, the toxemia from pyorrhoea makes it worse. If there is backache from uterine misplacement, if there is indigestion from gastric or duodenal ulcer, if there is loss of appetite or nausea from chronic gall-bladder disease, the symptom is accentuated by pyorrhoea. These people, although not actually sick are chronically indisposed, and abdominal or pelvic surgery done on them will not entirely relieve them of symptoms until the associated pyorrhoea is removed.

This is a disease the direct result of unclean teeth. Work for its prevention should begin as soon as the teeth are cut and should continue as long as the teeth last. General Obregon has wisely said he had rather teach the Mexican people to use a tooth brush than the rifle. The use of the tooth brush and the necessity for clean teeth should be taught in the home and in the school. The tooth brush is even more important than the wash rag. Teeth that are well brushed twice a day with a stiff brush will not become infected nor will they decay. When pyorrhoea is recognized, the patient should be sent to a competent dentist to have the teeth freed from mould and tartar, especially about the roots. Accumulations should be removed and kept removed by the tooth brush supplemented by periodic visits to the dentist. If two-thirds the pericementum is destroyed, the tooth is hopeless and must be extracted.

When the patient has an abdominal lesion demanding surgery, shall the teeth be pulled before or after operation? Each case must be decided on its merits. If a simple appendectomy is done and the patient is in good condition, the teeth may be pulled before he comes from under the ether. If the operative risk

be poor and the necessity for operation not imperative, the teeth should be pulled under gas anaesthesia and the patient allowed sufficient time to get the benefit of the extraction and the freedom from absorption before submitting him to operation. After extraction, the sockets should be curetted to remove all loose fragments and dead bone. Pulling teeth is more of a shock to the patient than we realize and should not be done at the time of operation unless the patient is in condition to withstand the double ordeal.

The necessity for specific treatment of the luetic patient after operation is recognized everywhere. The frequency of malaria in this climate as a cause of post-operative fever has not been appreciated. The role of syphilis, tuberculosis, malaria and hookworm in complicating surgical convalescence and in indefinitely prolonging post-operative morbidity, must not be forgotten. Pyorrhoea is more common than any of these and may be the unrecognized and untreated cause of continued ill health after operations that have removed the abdominal pathology but have not cured the patient. We have had cases demonstrating this repeatedly and in conclusion will give one case history.

1920. CASE No. 281. Mrs. F. H., age 38, housewife, mother of 4 children, all living, youngest 3 years, was admitted to the Baptist Hospital, September 27th, 1920.

FAMILY HISTORY.—Negative.

PREVIOUS HISTORY.—She had influenza in 1918. The menstrual period have been irregular for two years, coming every two to four weeks and lasting five days with considerable flow. Her back aches all the time. Her head aches during menstruation.

PRESENT HISTORY.—For two years she has had pain and tenderness below navel on right side but has had no acute attacks. She is often nauseated but this has no relationship to eating and she does not vomit. She has no appetite and is very weak. She has had bad teeth for over a year.

PHYSICAL EXAMINATION shows a frail woman, sallow, somewhat emaciated. Her breath is foul. She has advanced pyorrhoea. Several molar teeth are missing but all the teeth present are involved. The gums are spongy and bleed when touched. Many of the teeth are loose and pus wells up about them

when the gums are pressed against them.

The chest is negative. The urine is negative. There is tenderness on deep pressure over McBurney's point. Bimanual pelvic examination shows the uterus retroverted without evidence of adnexal inflammation. The perineum is lacerated and relaxed.

PRE-OPERATIVE DIAGNOSIS.—Chronic appendicitis, retroversion, lacerated perineum.

AT OPERATION. Open type, non-inflammatory appendix was removed. The uterus was suspended by the Gilliam method and perineorrhaphy done.

POST OPERATIVE HISTORY.—Convalescence was slow. The laparotomy wound suppurated but healed without hernia. The patient sat up the 14th day and went home on the 21st day but she did not gain strength and weight satisfactorily. The headache, the backache, the nausea, the weakness continued but were less severe. The pain in the right side has not been felt since operation. On December 6th, under gas anaesthesia she had all her teeth extracted. When seen on January 6th, all evidence of pyorrhoea had disappeared. Her appetite was ravenous. The nausea, the backache, the headache had not been felt since her teeth had been pulled. She complained of her clothes being tight and says she has gained 14 pounds. Her color is good. She is a new woman.

THE ELECTROCARDIOGRAPH IN DIAGNOSIS.*

By DOUGLAS VANDERHOOF, A. M., M. D., Richmond, Va.
Professor of Medicine in the Medical College of Virginia.

The electrocardiograph is an instrument of precision for registering the action current generated by the contraction of the heart muscle.

Simply described, it consists of a powerful electro-magnet between the poles of which is suspended a very delicate string or fibre, made of quartz and covered with gold or silver. The diameter of the string is from 1.5 to 3.5 microns; its length is about 13 centimeters.

The string being so fine, it is necessary to have some arrangement by which its movements may be registered. As a consequence, an arc light is utilized to illuminate this tiny string and by a system of lenses the light is focused on the string. By means of a projec-

*Read before the twenty-third annual session of the Tri-State Medical Association of the Carolinas and Virginia, Spartanburg, S. C., Feb. 16-17, 1921.

tion microscope the image is thrown on a photographic film which moves at a constant speed which, when developed, gives the electrocardiogram.

In order to understand the nature of the electrocardiogram, it is necessary to keep continually before the mind that such curves and tracings obtained by the electrocardiograph are accurate time records of the contracting heart, and as such the records must be interpreted. The instrument yields most information in the arrhythmias, and in this field the knowledge gained is accurate and fundamental. The effort is frequently made to cause the instrument to tell of specific pathological conditions in the heart, such as valve lesions, etc., but so far this has met with ill success.

The most frequent question that one is asked is, Why does not an hypertrophied heart give an electrocardiogram proportional in size to its enlargement? The answer to this is understood when one remembers the gross anatomy of the heart. It should be recalled that the embryonic heart is a tube and, during development, that it is gradually folded upon itself in such a way as to make the four chambers and their orifices. In the folding process, muscle fibres become criss-crossed, thinned in some places, thickened in others, and form altogether a very complex arrangement. Now, the galvanometer will do only one thing and that is to tell the difference in potential (voltage, if you please) between any two points; and so the electrocardiograph will show at any instant of the cardiac cycle the voltage of cardiac muscles then contracting. The electrocardiogram is, therefore, a resultant voltage curve of cardiac muscles during the cardiac cycle.

The different waves that go to make up an electrocardiogram are called, as you probably know, P, Q, R, S, T, U, and lettered in the order of their occurrence. Considered separately, as to what these waves are ascribed: The P wave is caused by the contraction of the auricles, the contraction being initiated at the sino-auricular node and spreading over the auricles. The impulse is transmitted through the bundle of His and spreads to the two ventricles causing ventricular contraction. The time required for the transmission of this impulse in normal hearts is from .16 to .21 seconds. This interval of time is called the P-R interval and represents the conduction time.

In the analysis of electrocardiograms, the

conduction time gives evidence of the patency of this auriculo-ventricular pathway, or of damage to this bundle of His, simply from the measurement of this interval. The interval may be altered temporarily by fever and by certain drugs, notably digitalis, in addition to its change in organic disease.

Following the P wave, the Q, R, S group occurs. These waves are caused by the ventricular contraction and, of the three excursions, the R is the most important; its direction, whether up or down, indicates the preponderance of the right or left ventricle. The height of the ventricular excursion indicates, according to some workers, the force of the cardiac contraction. However, this point is unsettled and does not seem sound, as the heart of a frog with ventricles empty of fluid may in contraction produce excursions 4 to 5 cm. high, whereas, when pumping blood normally, the ventricular excursion is not more than 1 cm. The Q-R-S interval has been said to be an index of the condition of the arborization of the neuromuscular bundle in the ventricles, and a prolongation of this time means damage to the arborization of the conducting paths.

The T wave is the one about which least is known and there is no proof that gives a definite cause for it. Lewis states that it is usually positive, i. e., upright, but it may be negative, or inverted, in electrocardiograms of healthy subjects. Digitalis causes a change in its sign (from positive to negative) and this change occurs when the heart is thoroughly digitalized. The sign is an excellent one for gauging digitalis therapy. A negative (inverted) T wave in the so-called second lead, provided the patient is not digitalized, indicates serious myocardial disease and a most unfavorable prognosis. The U deflection is sometimes seen in electrocardiograms of slow heart rates and to it no significance is attached, as it occurs for the most part in normal individuals.

Electrocardiograms are obtained from three positions, namely from right arm to left arm, called Lead I; from right arm to left leg, called Lead II; from left arm to left leg, called Lead III. These three leads, or derivations, give certain information when considered collectively. It is not necessary from a mathematical point of view to take three leads, as given any two leads the third can be con-

structed. Such, however, is tedious and it is much simpler to take the three leads.

Briefly considered, the things that are quickly determined by the electrocardiograph are variations in rhythm and rate, such as paroxysmal tachycardia, sinus arrhythmia, ventricular rhythm or nodal rhythm, auricular flutter, auricular fibrillation, heart-block, the various forms of extra systoles and their foci of origin, tripling or coupling of the heart beat, etc. In addition, good evidence is secured of localized or widespread myocardial disease, together with evidence of preponderance of the right or left ventricle.

Is the electrocardiograph essential in the diagnosis and treatment of heart disease? Perhaps this question can best be answered by an analogy to the use of the Roentgen ray in its influence on diagnosis and treatment. Given a case of fractured long bone in the leg, the surgeon can diagnose the fracture and apply proper treatment without the use of the x-ray but it is a comfort to the surgeon to demonstrate the fracture and to satisfy himself that the ends of the broken bone have been properly approximated. Given, also, a typical case of uncomplicated duodenal ulcer with its history of hunger pain and food relief, the diagnosis can usually be made from the symptoms alone and appropriate treatment outlined; yet the physician is better satisfied if the x-ray examination confirms the clinical features of the case, and the patient more readily consents to adopt proper treatment.

So it is with the electrocardiograph. Most instances of heart disease can be correctly diagnosed and properly treated on the basis of a careful history and physical examination. How much better this can be done, however, is already indicated by the analogy to the use of the x-ray mentioned above. In addition, we are already indebted to electrocardiography for the correct explanation of certain problems in cardiac function, and we may anticipate further benefits. These have to do with such matters as the forms of the electrocardiogram, voltage as the expression of function of the cardiac musculature, volume output of auricles and ventricles, etc.

Lastly, familiarity with the principles of electrocardiography and the ability to interpret electrocardiograms are great stimuli to clinical observation and correlation. The application of graphic methods to the study of

any physiological or pathological process may be expected not only to solve problems that have hitherto been unexplained but also to serve as a fundamental check on our clinical studies.*

CIRCUMCISION PREVENTS SYPHILIS.

By ALEXANDER IRVINE, M. D., McDowell, W. Va.
Former Surgeon and Superintendent, Sheltering Arms Hospital, Hansford, W. Va., and W. Va. Miners' Hospital No. 1, Welch, W. Va.; Surgeon N. & W. R. R.

Acquired syphilis, as a rule, comes from infection through an abrasion on the foreskin, for which you may remove the foreskin by circumcision, so you will have no abrasion. The parts become tough like the skin and are abraded very seldom—I should say in not over five per cent. The Jews hardly ever have syphilis because they have all been circumcised; they follow the Bible, the universal guide for us all.

Syphilis stands next to tuberculosis as a cause of death. I expect national circumcision would prevent forty thousand deaths in the United States each year—half the number of men we had killed in the World War—and, in a few years, would stamp out practically all acquired syphilis in men and women and inherited syphilis in infants, as the women take it from the men and the men from the women—just a circle, but preventing it in one sex would prevent it in the other.

I believe nation-wide circumcision would do more good than all the mercury iodide and salvarsan in the world, many times over. Prevention of the abrasion on the penis is the keystone to the arch in the prevention of syphilis, and the simple surgical operation of circumcision does this. I would like and hope to see its importance brought before the world. "Prove all things; hold fast to that which is good" is the biblical injunction to follow in all matters.

Permanent Organization Effected.

At a reunion in June of the membership of Base Hospital No. 41, which was recruited at the University of Virginia by Dr. William H. Goodwin, for service abroad, a permanent organization was effected, and Dr. Goodwin was elected honorary president. Dr. Dan. H. Witt, of the class of '14, of the University Medical School, and now of New York City, was elected a member of the executive committee.

*Foot Note: The author's paper was illustrated by lantern slides of normal and abnormal electrocardiograms.

Medical Education

The Adoption of the Report of the Commission on Medical Education in Virginia.*

Many and varied have been the expressions in regard to the Commission's recommendation of locating the medical department of the University of Virginia in Richmond. The report of the Commission, giving both sides of the controversy, has been sent to the physicians in Virginia. Those advocating the location of the consolidated school in Charlottesville have carried the question into the political arena and now, not only the medical profession, but the people of the State in general, are flooded with propaganda. To get before the physicians of the State the reasons which influenced those of the Commission voting in favor of Richmond, we deem it only necessary to make a brief abstract, with a few explanations, from the majority report of the Commission; no minority report, up to the present time, having been submitted.

The majority report stated:—

CONDITIONS IN VIRGINIA TODAY.—There are today 2,552 licensed medical practitioners in Virginia, which is less in proportion to the population than is the case in the majority of the other States of the Union. Virginia needs proportionately a larger number of physicians than most of the other States because she is essentially an agricultural State, and she is geographically so formed that many of her sections are difficult of access, due to the western portion being mountainous and the tide-water region being divided by rivers or indented by the sea. Dr. Ennion G. Williams, State Commissioner of Health, who is thoroughly familiar with the situation, states that the number of doctors in the cities is not too large, if it is large enough, and that the rural sections of the State are pitifully under-supplied.

THE LOCAL SUPPLY OF PHYSICIANS is largely dependent on the Medical Department of the University of Virginia, founded in 1827, which has furnished 262 of the doctors now practicing in the State and has this session an enrollment of about 120 medical students; and on the Medical College of Virginia founded in 1838, which has furnished 1,132 of the doctors now practicing in the State and has this session an enrollment of 117 pharmacy, 130 dental and 173 medical students. Both are Class

"A" Medical Schools and both are owned, controlled and largely supported by the State.

Some of the reasons why Richmond should be preferred as the location of the school are as follows:

1. Population sufficient to furnish adequate clinical material.
2. Residence of specialists available as clinical teachers.
3. Location of State owned college and hospital buildings.
4. Proximity of headquarters of State and City Boards of Health and other related State and city activities.
5. Opportunity to teach dentistry and pharmacy in addition to medicine.
6. Probability of new sources of financial support.
7. Occupation of field which, if left vacant, would lead to future competition.

If the plan and procedure recommended in the majority report is followed, it then will be the duty and privilege of the authorities of the University of Virginia to determine the plan of organization of the Consolidated School, to provide for its administration and to prepare a budget of income and expenses.

In considering the question of Dr. Flexner's report, it is very interesting to know that Dr. W. S. Crocker, Dean of the University of Texas, wrote us the following, which shows that in 1909 and 1910 Dr. Flexner said that the medical department of the University of Texas should be moved from Galveston to Austin, the seat of the university. In 1920, however, he said that he thought it would be better to move the medical department to a large town so as to get clinical facilities. In 1921 he advocates the medical school in a small town on the campus of the University of Virginia. We wonder what his opinion will be in 1922 or some other date.

"When Dr. Abraham Flexner made his survey in 1909 he advocated in the Carnegie Foundation Report on Medical Education published in 1910, that the Medical School of the University of Texas should be removed from Galveston to Austin, so that it could be united more closely with the main university.

"When he was here in January, 1920, I asked him if he still held that opinion. He replied that he did not; that the advantages of getting plenty of clinical material in a large city are so great that he thought it would be much better if it were moved to a large city like Houston or San Antonio, each of which has a population of 150,000 or more. This gives the opinion of a disinterested and competent observer."

*Sent this journal for publication by Drs. McGuire and Tucker.

The authorities of the University of Colorado, considering whether to locate the medical school at the seat of the University at Boulder or at Denver, make the following very pertinent statement:

"Twelve State Universities have preferred to separate their medical schools by distances varying from 10 to 300 miles from their campus in order to gain clinical facilities, compared with only four which have attempted to carry clinical teaching in a small city in order to retain the school on the campus. The dates of organization of these four schools are as follows: Virginia, 1827; Michigan, 1850; Vermont, 1853; Iowa, 1869—dates when medical education differed materially from that of the present day and the competition of other good schools was far less. Of the four, Michigan and Iowa only are strong schools. It is believed that it may be fairly held that if a decision must be made between **university atmosphere** on the one hand and **extensive teaching facilities** on the other, the experience of other schools is overwhelming that a medical school can reach a high standard of excellence without the former, but cannot rise above mediocrity without the latter."

Much has been said about the University of Michigan but let us consider the question of obstetrical cases alone.

These cases may, indeed, be transported, but with what degree of satisfaction may be gathered from the following quotation from the Dean of the University of Michigan Medical School, which is held up as the finest example of a small town school.

"The reason why I most regret that the university is not located in Detroit is our inability to at one and the same time utilize the clinical material and serve the people of Detroit. In Detroit we might have had long ago great lying-in wards where our students would have received valuable training and at the same time the poor of the city would have been served. In order to overcome this special difficulty we have been compelled at considerable expense to take expectant mothers some weeks before confinement and keep them for some weeks afterwards."

Each student of the Medical College of Virginia is required to personally deliver twenty cases, before he can apply for graduation. If the State of Virginia had to pay for hospital care of each case for from five to eight weeks, the expense of this clinic alone would consume an enormous appropriation.

The Virginia State Board of Medical Examiners was consulted and Dr. J. W. Preston, Secretary, of Roanoke; Dr. H. U. Stephenson, of Toano; Dr. P. W. Boyd, of Winchester, and Dr. P. St. L. Moncure, of Norfolk, all gave very strong statements favoring Richmond as

the location of the consolidated school. These statements together with that of Dr. Ennion G. Williams, State Health Commissioner of Virginia, should bear overwhelming weight in favor of Richmond because they are by men who know the necessities of the State of Virginia and the opportunities and future of medical education in Virginia.

The report of the majority of the Commission advised location in Richmond for further reasons, among which were:—

That the Richmond plant is larger and more complete.

That the dental and pharmacal schools should be continued and could only be continued in Richmond.

That besides having 247 students in dentistry and pharmacy, Richmond already has 173 students in medicine, while Charlottesville has none in dentistry and pharmacy and only 130 in medicine.

That Richmond has already over 500 hospital beds for clinical purposes as compared with 150 at the University.

That the University would gain, and the State would gain, some \$800,000 worth of property by locating the school in Richmond.

That Richmond and its environs furnish, without expense, adequate clinical material, and that to get clinical material in Charlottesville would require great expense and legislation.

That location in Richmond would give the advantage of close contact with the City and State Boards of Health, their laboratories, private hospitals, city hospitals and Public Health work.

That Richmond is already a great medical center and the University here could obtain clinical teachers of experience and reputation in all branches, while there is practically no hope of developing the various specialties in Charlottesville.

That a large city like Richmond possesses great cultural and religious opportunities and that Richmond as well as being a medical center is also an educational center on broad lines.

That there are no great administrative difficulties in having the medical department of the University in Richmond as it would be a part of the University, managed and controlled in every way by the University

and that the idea of dismemberment is a fantasy.

That, beside hospital cases, Richmond has a tremendous ambulatory clinic of acute cases and injuries which could not possibly be obtained in a small town.

That, if the school is in Richmond, it will be larger and more physicians will be furnished to the State.

That the University would have greater influence by locating its medical department in Richmond because it is the seat of the State government, the largest city of the State, and is recognized as the financial, industrial, political, medical and educational center of the State.

That location in Richmond would probably induce financial help in that the citizens of Richmond have already given more than half a million to medical education in Richmond.

That it is desirable to have only one medical school in the State, and that, if the University of Virginia's medical school is not located in Richmond, some proprietary or other institution would be established.

That the cost of medical education to the student is less in Richmond by far than in Charlottesville, and, that this enables the poor boy to study medicine, and further, that opportunities are offered, and are now taken advantage of by the students of the Medical College of Virginia, to get work which will help them to pay their way through school.

It would be an utter impossibility to get all of these advantages for a small town like Charlottesville and the expense of building up a clinic for the school by forced methods, and the legislation necessary to maintain it, would be impractical and unwise.

The Medical College of Virginia already has the loyal support of 1,132 physicians, 386 dentists, 376 pharmacists, as alumni. The University of Virginia has only about 262 medical alumni in the State.

Under the control of the Medical College of Virginia the following hospitals are available:

The VIRGINIA HOSPITAL, completed in 1893, accommodations for 240 patients, valued at \$96,135.00.

The MEMORIAL HOSPITAL, completed in 1908,

accommodating 181 patients, has an assessed value of \$193,800.

The DOOLEY HOSPITAL, completed in 1920, accommodating 50 patients, assessed value of \$60,000.00.

St. PHILIP'S HOSPITAL, completed in 1920, accommodating 188 patients, assessed value of \$203,800.00.

Besides this the old Medical College of Virginia building, completed in 1845, has an assessed value of \$66,000.00 and the new teaching building, one of the best and most thoroughly equipped schools, completed in 1912, has an assessed value of \$173,500.00.

Coming to the question of whether the school could be operated financially in Richmond, we refer again to the great authority of Dr. Pritchett, who wrote, under date of February 24, 1921, as follows:—

"In my office in New York, we have rather complete statements as to the incomes of the various medical schools of the country. The stronger schools are spending from \$150,000 to \$350,000 annually; this is exclusive of hospital support. I should say that a total of \$485,000 a year ought to form the basis of a sound and fruitful modern medical school. Starting from this income no doubt a sum requisite for increasing need would be provided."

It is essential that Virginia should have a large and efficient medical school to furnish her people with adequate professional services to maintain them in health and to cure them in sickness. She cannot trust other States to do for her what is plainly her duty to do for herself. It is not a theory but a condition that confronts the State. It is, therefore, a question, not primarily of cost, but ultimately of economy and efficiency, that has to be considered. The wisdom of consolidating the two State supported schools is universally accepted, and if the new school is to be located either in Richmond or Charlottesville, it is obvious that under existing circumstances it should be located in Richmond where it can be done at less original expense and with greater promise of future growth and development.

The final report of the Commission on Medical Education was as follows:

- 1st. There should be one State-supported medical school.
- 2nd. It should teach medicine, dentistry and pharmacy.
- 3rd. It should be located in Richmond.

4th. This school should be formed by the merger of the Medical College of Virginia with the Medical Department of the University of Virginia through the unconditioned transfer of the property of the Medical College of Virginia, subject only to the existing liabilities.

5th. The medical school so formed should be a *bona fide* department of the University of Virginia, having the same academic relationship to the University of Virginia as that borne by the present Department of Medicine, and the task of organizing this new medical school in all its details should be entrusted to the authorities of the University of Virginia.

We believe that it is the duty of the medical and dental profession and of the pharmacists of the State to vigorously uphold the majority report of the Commission and we call upon them to do so. We also ask that they see that their representatives also uphold the majority report of the constituted authorities appointed to investigate the question of Medical Education in Virginia.

Signed: STUART MCGUIRE, M. D.
BEVERLEY R. TUCKER, M. D.

Letter From the Leading Educational Expert in America.*

Dr. Henry S. Pritchett, President of The Carnegie Foundation and one of the greatest experts in educational matters in America, urges that the one State-supported medical school be located in Richmond. He writes as follows to Dr. S. C. Mitchell:

TO DR. S. C. MITCHELL,
Richmond, Virginia.

I have your letter of June 6, signed by yourself and three other gentlemen associated with you and asking my personal views as to whether it is wiser to permanently develop the Medical School of the University of Virginia at Charlottesville or at Richmond. My letters to Dr. Hough, and particularly those of the 21st of December and of the 20th of January, would seem to make clear my position.

I have tried to set forth in these letters that, given an unlimited amount of money, a strong medical school could be developed in either location, but that such a solution of the ques-

tion left out of view matters of general policy which seem of primary importance.

From the standpoint of administration, it is a simpler question for the University of Virginia to develop a medical school on its own campus. Such a school would probably remain of the type of the present excellent but limited institution. Ninety-seven miles away is the city of Richmond. If the University of Virginia shall have free hand to conduct its medical department in that city, the development of a medical school on sound university ideals is an entirely feasible undertaking. But, in addition to this, certain very important facts of public significance have to be reckoned with.

Richmond is not only the capital of the State and its chief commercial center, but it has a historical connection with the South and Southwest such as few cities possess. It has a large community of medical practitioners whose standards of scientific aspirations approach each year more closely those of modern science. The support and co-operation of such a body of medical practitioners is one of the great sources of strength of any medical school.

Furthermore, Richmond has hospitals and clinical facilities such as are developed only in cities of considerable size and while these do not at present represent the most modern relations between a medical school and a hospital, the possibilities of such co-operation are indefinitely great. It may, I think, be safely assumed that there is to be a medical school in Richmond, and that such a school will in time gather to itself the support of this great community. Furthermore, I think it may equally certainly be assumed that the medical students from this region will in the long run be attracted to the city of Richmond rather than to Charlottesville.

Taking into account, therefore, all these considerations, it seems to me that the opportunity of the University of Virginia to serve the cause of medical education and to take a commanding position in the training of medical practitioners in the region in which it stands, lies in the development of its medical school in the city of Richmond. In my judgment, this development can be had without the sacrifice of scientific relations with the university or of scholarly ideals.

There is one other matter not to be forgotten in the development of an institution like a medical school. The reaction of a group of

*Published at the request of the Committee for the Adoption of the Report of the Commission on Medical Education in Virginia.

highly trained men toward a community depends in large measure upon the richness and variety of the life of the community in which they work. A group of able men conducting a medical school will have in a community such as Richmond, relations on the whole more fruitful and more important than they are likely to have in a smaller community, and the result of such relations will have far greater influence upon questions of public health and hygiene and of preventive medicine, which in the future are to form a larger and larger part of medical teaching. The opportunity to develop a medical school in such a center seems to be a distinctly greater opportunity for the university. I am very sincerely yours,

HENRY S. PRITCHETT.

Public Health

In The Tuberculosis Field.

MORE LIGHT ON THE SPAHLINGER CURE.

Dr. Th. Stephani, writing from Montana, Switzerland, makes this contribution on the Spahlinger treatment for tuberculosis, to which reference has been made in this department before:

"As you have seen, M. Spahlinger of the Bacteriotherapeutic Institute of Carouge, Geneva, has been engaged in developing certain specifics for the cure of tuberculosis. Some of these are antitoxic and bacteriolytic serums; others are organic ferments and some are vaccines.

"The antitoxic serums and also the ferments are used for febrile cases, those of doubtful outcome, or in conjunction with the introduction of vaccines.

"The vaccines are tuberculins which are intended to vaccinate the organism more effectively than the tuberculins used heretofore. These vaccines are to be used for those cases which have sufficient strength, with little fever, yet with indications that the tuberculosis will not spontaneously effect a cure.

"The bacteriolytic serum is especially indicated in disease of the bone."

"It will be probably six months before any of the Spahlinger specifics are available. M. Spahlinger, having used all his fortune in his research work, is not able at this time to proceed with manufacture. His studies are scientific exclusively, and he does not sell his serums

and vaccines, which have always been given free. Consequently he is not ready to furnish them on a commercial basis."

MENACE OF BOVINE TUBERCULOSIS.

"Scientific investigations made by various commissions and private workers establish beyond cavil that among children a considerable percentage of cases (of tuberculosis) is due to the bovine type, probably introduced by consuming milk of tuberculous cows."

This is an extract from a report by Dr. J. A. Kiernan, Chief, Tuberculosis Eradication Division, Bureau of Animal Industry, U. S. Department of Agriculture. That bovine tuberculosis may be communicated to man is an undisputed fact now and has been since the cause of the disease was determined.

One case reported by Dr. Kiernan follows:

"While recently conducting the regular tuberculin tests around Santa Rosa, Dr. Whitehead condemned two cows which had reacted to the test. When he informed the owner of the results of his test, she began to cry. Thinking that her cause for grief was the loss of the two cows, he tried to console her with the statement that the cows were diseased and she ought to be glad to know it. Whereupon she promptly replied: 'That isn't what I am crying for. I have a baby nine months old, and three months ago the doctor operated upon her for tuberculosis of the hip. As a result my baby is now in a plaster cast. My baby was fed entirely upon the milk from these two cows.'

"Investigation developed that neither parent is tuberculous, nor had they ever had tuberculosis in either of their respective families. Moreover the baby had never been away from home."

Dr. Kiernan concludes that the suppression of communicable diseases among meat producing animals is essentially a matter for public health consideration, as well as for the preservation of a healthy animal husbandry. Bovine tuberculosis is communicable to human beings and it matters little the per cent. to which the disease is transmissible. If only a few children become tuberculous from consuming milk infected with tubercle bacilli, it is the duty of society to prevent the distribution of the disease to that extent. However, the evidence at hand, accumulated by various workers in different parts of the world, has clearly

demonstrated that the number of human beings showing an involvement from bovine source is not an inconsiderable percentage. The campaign of controlling tuberculosis, whether it be among the people or the animals, should be conducted along co-operative lines. Anti-tuberculosis associations—national, state, and municipal—can and should assist by various ways in the campaign which is now being conducted throughout the nation in the suppression of tuberculosis among cattle and swine.

B. L. T.

Correspondence

Senator Trinkle's Record With Regard To The Medical Profession.

RICHMOND, VA., JUNE 3d, 1921.

TO THE EDITOR:

In a very excellent editorial that appeared in the *Virginia Medical Monthly* a short time ago, the commendable advice was given to the doctors of Virginia to take a more active part in politics. The spirit of the editorial seemed to indicate that it was not for the sake of politics, but in order to have offices held by as high type of men as it was possible to secure.

The medical profession of Virginia is peculiarly responsible to the people of Virginia for the health situation in this State. While under ordinary conditions it would probably be improper to take any very active stand in the present campaign of the two candidates for the office of Governor of Virginia, one of the candidates has a record which is so inimical to the doctors and to progressive and scientific medicine and surgery, that it should be fully exposed. There were two special medical license bills introduced in the last two legislatures; one, Senate Bill No. 55, session of 1918, which gave a right to Arthur de Collard to practice Poropathy without standing the State Board, and the other, Senate Bill No. 271, session of 1920, which was introduced to permit a "healer" to practice medicine without an examination. In the former bill, Senator Trinkle, while not the patron of the bill, was probably its most active advocate and, when it had been defeated, the bill was revived and passed through the effort of Senator Trinkle, as shown in the records. Senate Bill No. 271 was defeated in spite of its support by Senator Trinkle.

Senate Bill No. 55 was earnestly opposed by

a committee of doctors who appeared before the Senate and House Committee. The chairman of the committee of doctors was Dr. E. C. L. Miller and other members were Doctor Stephenson, of Toano, Doctors Murat Willis, Paul Howle, A. L. Gray, and many others. In spite of the earnest efforts of these gentlemen, the bill was passed, as shown by the record.

De Collard claimed to be a Corsican and a cousin of Napoleon. He is undoubtedly a foreigner. He said he graduated at several European universities but as for diplomas, he could not produce them, claiming that they had all been burned. He would not answer the simplest question on the elements of medicine and surgery because he said that the doctors were jealous of him and he did not propose to put himself in their power. His whole attitude could be readily judged by any man of common sense, and yet a bill for a foreigner of this type was taken up and pushed through over the earnest protests of the representatives of the medical profession.

I have no political or other axes to grind, but I feel if the medical men of Virginia will support for governor a man with Senator Trinkle's record, we have no right to complain of any indignities or lack of respect that may be shown us when he is in office. If, on the other hand, we earnestly oppose him, even though he wins, we will receive more respect and will certainly have more respect for ourselves than if we made no effort to resent his candidacy.

Can any one think that a man with Senator Trinkle's record can be seriously interested in maintaining the health of the people of Virginia, in upholding the State Board of Health or the standards of the Medical Examining Board, or can any one imagine that a man with his past record can give cordial co-operation to the management of the numerous State hospitals?

Of course, a candidate for office has a great many explanations but there is probably no truer saying than, "By their fruit ye shall know them."

The record of Senator Trinkle is as follows:

The record on Senate Bill No. 55, being "A bill to define and regulate the practice of Poropathy and Manipulative Surgery, to provide license of practitioners thereof, and to provide for a penalty for the violation of this act, and for other purposes."

On Tuesday, January 15, 1918, the above bill was introduced in the Senate by Mr. Wendenburg.

by request, and referred to the Committee on General Laws (Journal of the Senate, p. 55).

Mr. Trinkle was not a member of the Committee on General Laws. Manual of Senate, 1918, p. 10.

The bill in question as introduced read as follows:

SENATE BILL NO. 55.

Patron, Mr. Wendenburg, by request.

"A bill to define and regulate the practice of Poropathy and Manipulative Surgery, to provide license of practitioners thereof, and to provide for a penalty for the violation of this act, and for other purposes.

1. Be it enacted by the General Assembly of Virginia, That the system and practice of Poropathy and Manipulative Surgery is hereby defined to be a new branch of therapeutics, and is the use and employment of medical manipulation and absorption through the pores of the skin and the mucous membrane, without medicine taken through the stomach or the use of the knife, and the use and employment of healing and curative agencies and lotions, applied directly to the diseased organs and to the nerves controlling those organs, through the pores of the skin and mucous membrane, which are opened by medical manipulation, and which immediately reach the disease or ailment and drive therefrom the poisons of the disease or ailment through the eliminating organs of the human body, and by this process, heal and cure the following diseases and ailments: Neurasthenia or nervous prostration, internal cancers, stomach or otherwise; tumors, internal or otherwise; kidneys, liver, uterus, ovaries and all obscure ailments, adipose tissue, rheumatism, locomotor ataxia, cerebrospinal meningitis, St. Vitus dance, epilepsy, paralysis, tuberculosis of the joints, heart trouble, fatty degeneration, and valvular weakness; and also adjust, heal and cure broken bones, sprains, dislocations, displacements of muscles and joints, slipping of cartilages of knees or other joints, spinal injuries, breakages or displacements of small bones of legs and feet; and supplementary system and science of physical culture, by which every muscle of the human body is reached, developed and strengthened without the aid of any apparatus; which treatment and medical manipulation consist of poropathy, manipulative surgery, massage, physical culture, dieting, herb-lotions and salves, also including the treatment and cure of diseases or ailments through the pores of the skin and the mucous membrane of the human body as above mentioned and specified.

2. That any person who shall apply to, and present and submit to a commissioner of the revenue in any city or county of this State, who is authorized to issue licenses, a certificate in writing, sustained by affidavit or affidavits showing that he is of good character and that he is versed in the practice of poropathy and manipulative surgery, shall receive from the said officer a license issued by him, which shall entitle the holder thereof to practice poropathy and manipulative surgery, and as above defined, in this State for a period of twelve (12) months from the date of such license, for which the holder thereof shall pay to the treasurer of said city or said county, a license tax of ten dollars (\$10.00) per annum.

3. That any violation of the provision of this act shall be a misdemeanor, and shall be punished by a fine, not less than fifty dollars (\$50.00) nor more than one hundred dollars (\$100.00) or by im-

prisonment of not less than thirty (30) days, nor more than six (6) months in jail, or by both fine and imprisonment.

4. That nothing in this act shall be construed to apply to duly licensed physicians, to persons authorized to practice optometry, osteopathy, or chiropractic, under the laws of the State of Virginia, nor any other practitioner of any medical science, permitted and licensed under the laws of the State of Virginia.

5. In order that this act may be given effect as soon as practicable, an emergency is declared to exist, and this act shall be in force from its passage."

The Journal of the Senate, March 2, 1918, shows that the foregoing bill came up upon its second reading on that date with committee substitute and amendments to substitute. The committee substitute was as follows:

An act for the relief of Arthur de Collard and to authorize him to practice poropathy massage and manipulative surgery in the State of Virginia.

Whereas, Arthur de Collard has been engaged in the practice of poropathy and manipulative surgery in the State of Virginia for three years or more; and,

Whereas, it appears that a large number of respectable citizens of this State have been treated by the said Arthur de Collard and greatly benefited thereby and desire that the said Arthur de Collard be allowed to continue the practice of poropathy and manipulative surgery in the State of Virginia.

1. Therefore, be it enacted by the General Assembly of Virginia, That Arthur de Collard be, and he is hereby authorized to practice poropathy massage and manipulative surgery in the State of Virginia.

2. In order that this act may be given effect as soon as practicable, an emergency is declared to exist, and this act shall be in force from its passage.

The committee amendment to the substitute, proposed by Senator Conrad, was as follows:

"Committee amendment to substitute for Senate Bill No. 55. Sec. 1, line 3, at the end of line strike out a 'period' and insert a 'comma' and add the following: 'Provided that the said Collard shall first apply for and successfully stand an examination on anatomy and materia medica before the State Board of Medical Examiners.'"

Dr. Gravatt proposed an amendment to the committee amendment next above quoted, as follows:

"After the words 'materia medica' insert 'therapeutics, diagnosis, pathology.'"

Dr. Gravatt's amendment was rejected. Mr. Trinkle offered the following amendments:

1. Striking out all of the language of Sec. 1 following the word "lotions" in line 8.

2. In Sec. 2 strike out the words "for which the holder thereof shall pay to the treasurer of said city or said county a license-tax of ten dollars (\$10.00) per annum."

These amendments were agreed to.

Senator Strode offered an amendment as follows:

After the word "license" in Sec. 2, line 10, insert "provided that no person licensed under this act shall use or advertise himself as having the title of doctor."

This amendment was also agreed to. The committee amendment to the substitute was rejected and the committee substitute was rejected. Thereupon Mr. Trinkle moved to dispense with the read-

ing of the bill as required by Sec. 60 of the Constitution, which was agreed to. Ayes 18—Noes 4, Mr. Trinkle voting in the affirmative.

The original bill carried an emergency clause which required a four-fifths vote for its passage. The question then recurring on the passage of the bill, the bill was rejected for failure to receive the four-fifths vote required. Ayes 17—Noes 7, Mr. Trinkle voting in the affirmative, Dr. Gravatt and Dr. Hening being recorded in the negative.

Mr. Mapp moved to reconsider the vote by which the bill was rejected, which was agreed to. Mr. Trinkle then offered an amendment striking out the emergency clause, section 5 of the bill, which was agreed to. The effect of this amendment was to require only a majority vote for passage instead of the constitutional four-fifths. The bill was then passed. Ayes 16—Noes 6, Mr. Trinkle being recorded in the affirmative, Doctors Gravatt and Hening in the negative.

Mr. Trinkle moved to reconsider the vote by which the bill was passed, which was rejected. (Journal of the Senate, 1918, p. 563).

Senate bill No. 271 was a bill "To authorize the State Board of Medical Examiners to grant to J. Plummer Baldwin a certificate to practice drugless methods of healing in this State." On Saturday, Feb. 24, 1920 (Senate Journal p. 356), Senator Cannon moved to indefinitely postpone the consideration of this bill, which would have the effect of killing it. The vote on the motion of Mr. Cannon was—yeas, 13; nays, 10. Mr. Trinkle was recorded in the negative.

It seems, therefore, that Mr. Trinkle's friendship for "healers" is not confined to the single instance of de Collard.

Further comment upon this record is superfluous.

J. SHELTON HORSLEY, M. D.

Defense of Senator Trinkle by Doctor Hening.

Jefferson, Powhatan Co., Va.

June 27, 1921.

TO THE EDITOR:

I have learned that your paper, which is the official organ of the Medical Society of Virginia, will print in its next issue a letter from Dr. J. Shelton Horsley, attacking the Honorable E. Lee Trinkle, who is now a candidate for Governor, for voting for what is known as the de Collard Bill, and urging the profession to do all it can to defeat him on that account.

As a member of the medical profession and also a member of the Senate of Virginia I desire to register my protest against this attack on Mr. Trinkle and the use of the columns of your paper, the official organ of the Medical Society of Virginia, for this purpose. The bill passed the Senate by a vote of 17 to 6 and the

House by 56 to 10, after it had been amended so as to remove many of the objections. There were many important measures of a public nature, backed by the Medical Society of Virginia and the State Board of Health, which Senator Trinkle advocated and voted for, such as the following:—

To provide for public health nursing and medical inspection of school children.

To levy a one mill tax for the treatment and eradication of tuberculosis.

A joint resolution to appoint a commission to investigate the subject of preventable diseases.

To appropriate money and establish a hospital for the treatment of crippled and deformed children.

For prevention of blindness in children.

Requiring the use of sanitary towels in public places.

This attack seems to me to be not only unfair and unjust to Senator Trinkle, but to the medical profession. It puts us in the light of singling out one error in a man's public career and calling for his defeat for the high office of Governor because of that error, without taking into consideration his splendid record of service to the State and particularly to the medical profession and the State Board of Health during his entire legislative career. Further, it looks like playing politics rather than standing up for the ethics of the profession, because Senator Trinkle is singled out and no attack is being made on the other Senators who voted for the bill, two of whom are now candidates for Lieutenant-Governor, or the members of the House who voted for it, most of whom are candidates for re-election, nor on Governor Davis, who approved the bill and who has announced his candidacy for United States Senate.

I am authorized by Dr. Ennion G. Williams, State Health Commissioner, to state that he thinks it unjust to Senator Trinkle and unfortunate for the profession that this attack should be made and to state further that Senator Trinkle has been loyal, able and effective in supporting the measures for the betterment of the health of the people of the State.

T. S. HENING, M. D.

Practicing Physician and Senator from 16th Senatorial District.

Secretary's Announcement

Increased Cost of Liability Insurance.

An increase of two hundred per cent. in the cost of Physicians' Liability Insurance has been made by the companies writing policies of this nature within the past three months. The companies claim that they have been losing money at the old rate of fifteen dollars for the regular five to fifteen thousand dollar policy. This increase comes at a time when every one is feeling the business depression now on us, a depression which affects physicians as keenly as any other class or profession.

Assuming that the companies are correct, this increase means that more people are suing physicians for real or fancied damages—possibly more are getting verdicts. It is doubtless a continued development of the epidemic of hold-ups and highway robberies with which our entire country has been afflicted recently. At any rate it is a matter for serious consideration when the cost of protection goes from fifteen dollars to forty-five dollars at one jump.

The Medical Association of Indiana has met this problem and solved it in a most satisfactory way, according to a report made at the meeting of State Secretaries in Chicago, last fall, by Dr. Chas. N. Combs, Secretary of that organization. They have established a Legal Defense Fund costing each member one dollar annually. With this money the best legal assistance obtainable is furnished any member of that society against whom a liability suit is brought. No insurance is provided but, with the entire state organization backing each member, it is practically impossible for the plaintiff to get a verdict. So successful have they been that they have accumulated a surplus. The above statements are made from memory. A detailed statement by the Secretary of the Indiana Society has been requested and we hope to have it for an early issue.

Use Your Library!

Announcement of the establishment of our Circulating Medical Library has aroused considerable favorable comment from the members of the State Society and the actual use of it during the month of June has demonstrated the need of such resources. Members of the Society should keep in a convenient place the

lists of books available for distribution. Additions to the library will be listed in our Book Announcement column from time to time.

The library is a practical one. We prefer that the books be worn out in service rather than they should become receptacles for dust and cobwebs in this office. Send for what you want and, if it is out, your name will be placed on a waiting list to receive it upon return. If you so desire, you may name a first and second choice.

We hope to develop this library to such proportions that we can place in the hands of our members for a reasonable length of time any medical book they may wish to read. Such a service will not only help you keep up with the progress of your profession but also will enable you to select with greater care the books you wish to place permanently in your own library.

Financing such a proposition will not be difficult if we can secure the co-operation of the members of the Society. Practically all publications make arrangements with other periodicals for securing subscriptions in clubs at reduced rates. We have made similar arrangements and are in a position to take subscriptions and renewals for practically all magazines published. The commissions for handling this business will be applied to building up your library. Members of the society should remember this when notified of the expirations of their subscriptions to any magazines and should let this office have the renewals. Should all members of the Society give us this business, practically every new book on medicine and surgery of value can be placed in the library of the Society to be used by all of our members.

G. H. WINFREY, *Secretary-Treasurer.*

Proceedings of Societies

The Augusta County Medical Association, Inc.,

Held its regular bi-monthly meeting in Staunton on June 8, under the presidency of Dr. H. M. Wallace, of Greenville. Clinical cases were reported by Dr. M. J. Payne. A symposium on Exophthalmic Goitre was participated in by Drs. H. M. Wallace, J. F. Fulton, Wilbur M. Phelps and R. P. Bell.

Drs. J. F. Hubbard, of Waynesboro, and J. F. Fulton, Staunton, were elected to membership.

Dr. Frank Stafford, of Blue Ridge Sanatorium, Charlottesville, gave an interesting talk and heartily approved of the suggestion made by the president, who is also the Augusta County Health Officer, that Staunton and Augusta have a tuberculosis hospital. A committee was appointed and appropriation made to investigate and have punished all illegal practitioners in Augusta County.

In connection with health matters in Augusta County, free clinics have recently been held in various localities of the county by the Virginia Tuberculosis Association, and much interest was manifested in them.

The Norfolk County Medical Society,

At its annual meeting in Norfolk in June, elected the following officers for the ensuing year:—President, Dr. C. J. Andrews; Vice-President, Dr. Julian L. Rawls; Secretary-Treasurer, Dr. Lockburn B. Scott, all of Norfolk City.

Five members were selected to represent that Society at the Lynchburg meeting of the Medical Society of Virginia, October 18-21. They are Drs. C. J. Andrews, Southgate Leigh, E. C. S. Taliaferro, Julian L. Rawls and Frank Hancock, all of Norfolk.

The Fredericksburg (Va.) Medical Society.

At the regular monthly meeting of this Society on July 1, under the presidency of Dr. W. A. Harris, of Spotsylvania, papers were read by Drs. Tom A. Williams, Washington, D. C., and Garnett Nelson, Richmond, both of whom were elected to honorary membership.

The election of officers for the ensuing year was as follows:—President, Dr. Roderick Dew, Woodford; Vice-President, Dr. F. C. Pratt, Fredericksburg, and Secretary-Treasurer, Dr. J. N. Barney, Fredericksburg.

The Truth About Medicine

During May the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

The Gilliland Laboratories:

Acne Mixed Vaccine—Gilliland.

Hoffmann-LaRoche Chemical Works:

Pituglandol.

Lederle Antitoxin Laboratories:

Cholera Vaccine (Prophylactic)—Lederle.

Plague Vaccine (Prophylactic)—Lederle.

H. A. Metz Laboratories:

Silver Salvarsan.

Silver Salvarsan 0.05 Gm. Ampules.

Silver Salvarsan 0.1 Gm. Ampules.

Silver Salvarsan 0.15 Gm. Ampules.

Silver Salvarsan 0.2 Gm. Ampules.

Silver Salvarsan 0.25 Gm. Ampules.

Silver Salvarsan 0.3 Gm. Ampules.

Seydel Manufacturing Co.:

Guaicol Benzoate—Seydel.

Book Announcements

The Principles of Therapeutics. By OLIVER T. OSBORNE, M. D., Professor of Therapeutics, Department of Medicine, Yale University. 8vo. 881 pages. Philadelphia and London. W. B. Saunders Company. 1921. Cloth. \$7.00 net.

Osler may be regarded as the Sampson that wrecked the temple of drug credulity; also he may be accounted the idol of the succeeding age of therapeutic nihilism. Now we are in the midst of a new era of simple and practical therapeutics, an era in which knowledge has supplanted credulity on the one hand and skepticism on the other, and in which fewer drugs are being used and better treatment given.

Dr. Osborne's book is a timely production by an acknowledged authority. In addition to a section of 300 pages on drug therapy, there is a most interesting discussion of "The Endocrine Glands and Organotherapy," in 114 pages. As a preliminary to the chapter on "Vaccines and Serums," the author gives a comprehensive statement of immunity, allergy, protein poisoning, anaphylaxis, giving the cutaneous test for protein idiosyncrasy, recently described in the *AMERICAN JOURNAL OF DISEASES OF CHILDREN*. The reviewer can testify to the simplicity of this test and its efficacy in pointing the way to relief of some distressing cases of bronchial asthma. Space forbids a more detailed statement but we feel safe in saying this book embraces at least a concise statement of everything worth while on up-to-date therapy.

H.

Physical Diagnosis. By W. D. ROSE, M. D., Lecturer on Physical Diagnosis and Associate Professor of Medicine in the University of Arkansas, Little Rock, etc. Second Edition. St. Louis. C. V. Mosby Company. 1921. 8vo. 736 pages with 309 illustrations. Cloth. \$8.50 net.

Tuberculosis and How to Combat It. A Book for the Patient. By FRANCIS M. POTTENGER. A. M., M. D., LL. D., F. A. C. P., Monrovia, California. St. Louis. C. V. Mosby Company. 12mo. 273 pages. Cloth. \$2.00 net.

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Editorial

Doctors and Nurses.

Hearty co-operation between the doctor and the nurse is essential to the welfare of their patients. The physician and those who are entrusted with carrying out his instructions should be in full accord. Patients and their relatives should realize that remissness on their part is a serious handicap to the medical attendant. The failure of the doctor to attain his ends is not infrequently due to the ignorance, prejudice, superstition, and interference of others, while the adverse criticism he occasionally receives may be unreasonable and unjust. It is evident that the demeanor of the patient and his family towards the doctor and nurse has an important bearing upon their management of the case.

There have been complaints from doctors that nurses were selecting their cases; that they were too professional, and that they were inefficient; patients and their families, also, have stated that nurses were unsatisfactory in their attentions to the sick, and that they were unreasonable and too independent in the matter of their charges.

Nurses are no more infallible than other classes of workers, and the charges above mentioned could be more or less sustained. If nurses forget that their service involves risk, self-sacrifice, and the subordination of dollars and cents to the ideals of one of the highest,

noblest, and most useful of callings, they have probably made a mistake in choosing their vocation. It is a tax upon a doctor's patience to lose time in the effort to secure nurses who are selecting their cases, and who are unwilling to incur danger. If the nurse fails, in her ministrations, to throw her heart as well as her mind into her work, the patient and the doctor are both sufferers. If her limited knowledge of medicine tempts her to prescribe, or to offer suggestions to the physician, the consequences are evident. If she is so professional as to shirk some of the humbler duties of her vocation, her work is only half accomplished. Inefficiency, ignorance, or carelessness, may prove disastrous to those for whom she cares. If the fees are excessive, or if no consideration be shown to those who are unable to pay a reasonable fee, the nurse becomes an icicle or a money-making machine.

The private nurses of this city have recently held a meeting in which these matters were freely discussed. The consensus of opinion was that there was some ground for the complaints referred to, and that reforms ought to be made.

But there are two sides to all questions, and nurses have their grievances. Patients and their families may be at fault in the treatment of those whom they employ. The nurse is not a menial. She requires good and sufficient food, and a requisite amount of rest, in order to have a clear mind and steady hand. Like the rest of us, her expenses have to be met, and her fees should be promptly paid. We presume that the fees for nursing are regulated by the Nurses' Association; and, bearing in mind the exactions of their work, we can hardly regard the charges as unreasonable. The pay of a nurse engaged on a single case is rarely supplemented by outside additions. It may not be allowable to cut rates, but there are instances in which the nurse is only a humanitarian and gives her time without compensation.

The attitude of the doctor to the nurse is important, for upon this, in a great measure, depends the attitude of the patient and his family. The physician who regards the nurse as a slave instead of a co-worker cannot be surprised at not receiving the service which he expects. A nurse is still a woman, and a delicate and just consideration for her feelings will

go a long way in bringing out her best qualities. Moreover, she will always appreciate kindness and a word of encouragement, with a due regard to the respect and deference which women should always command.

If the hardships to which nurses are subjected, and to which the writer's attention has been called, be true, it is easy to explain why a number of nurses are becoming dissatisfied with private work and are preferring to take cases in the hospitals. It is stated by the Secretary of the State Board of Examiners for Nurses that the number of young women entering the training schools is greater than in war times, but that the hospitals and community positions are attracting a good many of the graduates. As it is, the general ranks available for private duty are thinner than they used to be. The call of the office, with better hours and pay, has been heard and answered by many who might otherwise have entered the hospital training schools. It is more difficult to secure good nurses now than in former days. The doctor and the public should do their part in seeing that the trouble is corrected and not increased. Nothing should be left undone to uphold and swell the ranks of the nursing profession.

The life of the conscientious nurse is not an easy one. Her broken health and shattered nerves bear witness betimes to this truth. Under certain conditions, she is justified in selecting her cases, while the defects laid at her door will often disappear when the disadvantages under which she labors are removed. We need to get away from the cold materialism of the present times and to throw every encouragement in the path of those who are engaged in the effort to uplift humanity and minister to its physical needs. Whether at the bedside, or engaged in social, community, or executive work, the nurse is a valuable asset to the public; nay more, she is a necessity. Her reward cannot be measured in silver and gold. Let us be more and more impressed with the fact that in making a living she is ennobling and enriching her own life, as well as adding to its usefulness. Let her vocation be made as attractive as possible, and her rewards be commensurate with the self sacrifice and labor which her duties entail. Then will her life be "*clarior e tenebris*," her numbers will be increased, her influence widened,

and her assistance to patient and physician materially enhanced.

As regards the connection between the social position of the nurse and the treatment she receives, a few words may not be inappropriate. Not all nurses can trace their descent to royalty; but the large majority of those who cannot lay claim to coats-of-arms are, nevertheless, by reason of education and association, entitled to a recognition of the qualities of mind and character which are the real makers of blue blood. The possessors of inherited or acquired wealth, and the aristocrats, may be discrediting themselves or vitiating their blood when looking down upon the wage earners. There are few who do not have to work in one way or another for a support; and all respectable work is honorable. Nurses are not blameworthy for declining to work where their social rights and prerogatives are not recognized.

When the patient and the members of his family, the doctor, and the nurse measure up to their obligations and make a practical use of the golden rule, all of them will become beneficiaries. May the breaches be closed up and not widened; for, while there may be no occasion for the wail of the pessimist or alarmist, there is a need for radical changes in order that a shortage of nurses may be averted.

WILLIAM S. GORDON, M. D.

The Location.

The location of the new medical department of the University of Virginia is the big question before the profession in Virginia. Both sides have agreed on all of the other main points involved in the creation of a modern State-supported medical school as a department of the University of Virginia.

You have, no doubt, made up your mind and formed your opinion based upon your ideas of what a modern medical school should be; after a consideration of the arguments submitted to the public by the advocates of Richmond and Charlottesville, and from your own conception of what is best for students, patients and the profession of this and future generations. Having formed a clear and definite opinion on this extremely important public question, for the sake of the high ideals of life, get out and work for the enactment of this opinion. There has never been a public question before the people of Virginia, which so clearly calls for the opin-

ion and political influence of physicians as this one.

Let the doctors of Virginia exert every effort to see that the majority opinion on this question is enacted into law by the coming legislature.

The Open Letter.

It is felt by the Editor that the Correspondence columns of the VIRGINIA MEDICAL MONTHLY should be open, under proper restrictions, to the members of the Society. If an individual member feels that he has an important message, that that message affects the welfare of the profession, and that he wishes to come before his fellows in a signed statement in the State journal, the Correspondence Department of the journal is open to him.

In this issue of the MONTHLY there will be found two signed letters to the members of the Society, discussing in the open something of what had been heard in conversation and private discussions about the legislative record of a senator upon matters in which the medical profession is interested.

Personnel of the Commission on Medical Education in Virginia.

By the terms of the legislative act, the Commission on Medical Education in Virginia consisted of two members appointed by the President of the Senate, two by the Speaker of the House, and five by the Governor, of whom one was to be a representative of the University of Virginia and one from the Medical College of Virginia. The personnel of the Commission was completed as follows: From the Senate, Hon. M. B. Booker, of Halifax, and Dr. J. Belmont Woodson, of Nelson; from the House, Hon. Wilbur C. Hall, of Loudon, and Dr. W. D. Prince, of Sussex; by the Governor, Dr. Beverley R. Tucker, of Richmond; President Julian A. Burruss, of Virginia Polytechnic Institute; Dr. E. L. Kendig, of Victoria; Dr. Theodore Hough of the University of Virginia, and Dr. Stuart McGuire of the Medical College of Virginia. The Commission organized on June 28, 1920, by the election of Hon. Wilbur C. Hall as chairman and Dr. Theodore Hough as secretary.

News Notes

Lynchburg Meeting, Medical Society of Virginia.

Interest is centering more and more in the approaching meeting of the Medical Society of Virginia to be held in Lynchburg, October 18-21. Dr. Geo. J. Tompkins, chairman of the local committee of arrangements, with an able corps of assistants, is active in work looking to the success of this meeting. Information with regard to the meeting may be obtained of him, or from the President, Dr. A. L. Gray, Richmond, or the Secretary, Mr. G. H. Winfrey, Richmond.

Two attractive features of this meeting will be the Orations on Medicine and Surgery, Dr. Alfred Stengel, Philadelphia, having accepted the invitation to deliver the former, and Dr. William J. Mayo, Rochester, Minn., the latter. Space has already been taken for a number of commercial exhibits. Members intending to read papers might take time by the forelock and send titles to the Secretary-Treasurer, 104½ West Grace Street, Richmond, before going on their vacations. This will insure getting your name on the program in its proper place.

Delegates should be appointed by component societies to represent them at the Lynchburg meeting. Each component society is entitled to one delegate and one alternate for each thirty-five members or major fraction thereof, with the understanding that each component society shall have at least one delegate and one alternate. Please send names of the delegates to the Society offices as promptly as possible.

This year, nominations are to be made to fill vacancies in the Executive Council for one councilor from the State-at-large, and for the second, fourth, sixth and ninth districts. This matter should be engaging the attention of all societies located in the above named districts.

Eliminating Venereal Diseases at Penitentiary.

According to the annual report made by the directors of the State Penitentiary, much progress is being made in eradicating venereal diseases among State convicts. As a result of the investigation of medical conditions, an examination was made of each prisoner at the Penitentiary and State Farm and now each pris-

oner is examined for venereal infection within forty-eight hours after admission. At the time of the first examination, 25% of all prisoners at Richmond were syphilitics; of 170 convicts at the State Farm, 33% had syphilis; and of 258 convicts at road camps, 14% were suffering from syphilis. With the system now inaugurated of segregating all convicts afflicted with venereal diseases and of treating all new convicts, there is every reason to believe that venereal diseases will soon be eliminated at these State institutions.

American Medical Association.

The seventy-second annual session of the association was held in Boston, June 7-10, inclusive, under the presidency of Dr. Hubert Work, of Pueblo, Colo. There was a registered attendance of 5,506—the third largest in the history of the Association. There were fifty members attending from Virginia. Delegates from this State were Drs. Ennion G. Williams, Richmond; Southgate Leigh, Norfolk, and Paul W. Howle, Richmond. As the third delegate, Dr. Jos. T. Buxton, Newport News, and none of the alternates could attend, Dr. Howle was appointed by the president of the Medical Society of Virginia, Dr. A. L. Gray, to attend as Virginia's third delegate.

The entertainments, scientific sessions, commercial and scientific exhibits were all so attractive as to leave nothing to be desired.

St. Louis, Mo., was selected as the 1922 place of meeting and the following officers were elected:—President, Dr. Geo. E. deSchweinitz, Philadelphia; Vice-President, Dr. Frank B. Wynn, Indianapolis; and Dr. Alex. R. Craig, as secretary; Dr. Wm. A. Pusey, as treasurer, and Dr. Dwight H. Murray, as speaker of the house of delegates, were re-elected.

Married—

Dr. E. Leavenworth McGill, Petersburg, Va., and Miss Patty Radcliffe Fitts, Wilmington, N. C., June 28.

Dr. Campbell Harris and Miss Winifred Gertrude Gwynne, both of Richmond, June 3.

Dr. John Stuart Hume, Norfolk, Va., and Miss Isabel Hamilton Christian, Lexington, Va., June 4.

Dr. Richard Hugh Wood, a recent graduate of the Medical College of Virginia and now an interne at St. Elizabeth's Hospital, Richmond, and Miss Maria Booth Robinson, of King William, Va., June 18.

Dr. Allen Tupper Hawthorne, Harrisonburg, Va., and Miss Dorothy Turner, Afton, Va., June 2.

Dr. William Wirt Waddell, Jr., until recently of Charlottesville, Va., but now of Norton, Va., and Miss Barbara Belle Flock, Williamsport, Pa., June 14.

Dr. George G. Snarr and Miss Reba Beard, both of Harrisonburg, Va., June 29.

Dr. Quintus Harper Barney and Miss Nell Richard Files, both of Wardensville, W. Va., June 25.

Dr. Benjamin J. Read and Miss Chloe Dymple Spriegel, both of Red Jacket, W. Va., June 8.

Dr. Henry A. Christian, physician-in-chief of Peter Bent Brigham Hospital, Boston, Mass., and Miss Elizabeth Sears Seabury, Longwood, Mass., early this month. Dr. Christian is a native of Lynchburg, Va., and is well known in this State.

Changes at Richmond Naval Recruiting Station.

Lieut. Leslie B. Wiggs, M. C., U. S. Navy, who has been attached to the Naval Recruiting Station in this city, has been ordered with the marine expeditionary forces to Port au Prince, Haiti, West Indies, and, with his wife, sailed from Hampton Roads on June 23. While in this service, he will hold the rank of captain.

Lieut. Toson O. Summers, recently of the Marine Barracks, Quantico, Va., has succeeded Dr. Wiggs as medical officer of the local navy station. Dr. Summers graduated from the Medical College of Virginia in April, 1917, and at once entered the government service. He has been stationed at Quantico for the past eighteen months. Dr. Summers is a brother of the late Dr. B. E. Summers, former medical inspector of this city, who died while on duty at the Marine Barracks at Quantico during the influenza epidemic in 1918.

Dr. Louis G. Roberts,

Moormans River, Va., was elected one of the directors of the Albemarle County Fair Association at its organization meeting in June.

Dr. D. Hunter Marrow,

Who has been spending some time at Daytona, Fla., is at his former home, Union Level, Va., for the summer months.

Dr. I. S. Stone,

Of Washington, D. C., formerly of Loudoun

County, Va., was given the honorary degree of Doctor of Laws by Georgetown University, on June 14. Dr. Stone taught in the Medical Department of that university for many years and is now Professor Emeritus of Gynecology. He is a member of the Medical Society of Virginia and is well known and highly esteemed by the profession of this State.

Medal Awarded Dr. Mayo for Achievements in Surgery.

Recently, the Boston Surgical Society determined to award periodically a gold medal to the American surgeon contributing most to the advancement of surgery. This was decided upon and dedicated as a tribute to Dr. Henry Jacob Bigelow, the noted surgeon of Boston, who died about 1890.

The first medal was awarded to Dr. William J. Mayo, of Rochester, Minn., on the evening of June 6, the day prior to the meeting of the American Medical Association in Boston. Dr. Mayo, in his address at that time, gave an intensely interesting history of the whole career of Dr. Bigelow.

Dr. P. St. L. Moncure

Has returned to his home in Norfolk, Va., after a ten days' visit at the Mayo Clinic, Rochester, Minn.

Another Doctor Candidate for Legislature.

Dr. Israel Brown, of Norfolk, Va., is a candidate for legislature, from that city, and is receiving the endorsement of the public as well as the profession.

Dr. E. M. Chitwood,

Who has been practising for some years at Austinville, Va., has moved to Wytheville, Va., where he will continue his work.

The National T. B. Association,

At its annual meeting in New York City, last month, elected Dr. James Alexander Miller, of New York City, president, and Dr. George M. Kober, of Washington, D. C., secretary. As illustrative of the wonderful strides which have been made in eradicating tuberculosis, figures were given in a paper by Dr. Lee K. Frankel, of the Metropolitan Life Insurance Company, showing that there had been a reduction of 39% in the tuberculosis death rate, in the registration area of the United States, from 1900 to 1919, or 60,000 fewer deaths in 1919 than there would have been but for the anti-tuberculosis fight.

Among the Virginia doctors attending the meeting were: Drs. Walter C. Klotz, Charlottesville; H. G. Carter, Burkeville; E. E. Watson, Salem, and Dean B. Cole, Richmond.

Young Workers Need Health Protection.

The United States Department of Labor, through the Children's Bureau, has just issued a report called "Physical Standards for Working Children," in which a committee of eleven physicians appointed by the Children's Bureau explain how the health of children between 14 and 18 years of age may be protected while at work.

An effective means of protection lies in the adoption of physical standards which all children entering industry are required by law to meet. Eighteen states now have a law requiring children to be examined before going to work. The most comprehensive of these laws requires that a child shall be of normal development for his age, in sound health and physically fit for the occupation which he is about to enter.

The report of the committee contains minimum standards of height and weight for specified ages, based on the most trustworthy experience and present day practice. It also lists defects for which children should be refused certificates, remediable defects for which they should be refused certificates pending correction, and conditions requiring supervision under which provisional certificates for periods of three months may be issued. The points which examining physicians should cover if adequate protection is to be given the working child are given in detail in the report, which also contains a record blank for the use of physicians in making these examinations. Periodical examinations for children after they have gone to work are recommended by the committee as a still further means of protection.

The Proposed Public Health Institute,

Which the U. S. Public Health Service contemplated holding in Washington, D. C., during the fall of 1921, has been indefinitely postponed. It is hoped that it will be possible to arrange to hold a similar institute in Washington during the spring or fall of 1922. This action has been decided upon after several conferences between officers of the Service and officers of the American Public Health Association.

The fiftieth annual meeting of the American

Public Health Association is to be held in New York City, November 14-18, 1921. Several other activities are planned by the association in connection with their semi-centennial meeting in November, 1921, and it was at the request of the American Public Health Association that the Service institute for next fall was abandoned.

The above announcement was made by direction of the Surgeon General, on June 20, 1921.

Saving Babies in New Zealand.

Over one-fourth of the babies born in New Zealand of both well-to-do and poor parents, are reached by the infant welfare measures in force in that country and they have been most effective in saving the lives of babies. In a period of 45 years, it is stated that the infant mortality rate in New Zealand has been more than cut in half until now it is the lowest rate of any country in the world. During the last ten years the rate of decrease has been almost double what it was for the preceding decade.

Beginning in 1901 and covering the period in which there was the greatest decline, the government has given special attention to the problem of providing suitable maternity and infant care. Among important public measures described in the report are regulations for the training and practice of nurses and midwives, the establishment of state maternity hospitals, and more careful supervision of homes in which children are boarded out. The government also subsidizes the work of the Royal New Zealand Society for the Health of Women and Children. One of the most important activities of this society is an extensive system of baby health centers at which specially trained nurses give free advice and instruction to mothers.

Dr. Ware Has Narrow Escape.

The latter part of June, Dr. R. B. Ware and Knowlton Williams, of Amherst, Va., narrowly escaped serious injury, when an automobile driven by Mr. Williams rolled down a steep bank near Amherst. In rounding a curve, the steering wheel got out of control and the car went over on its top. Mr. Williams was not hurt but Dr. Ware received slight cuts on the back of his head, face and one limb. He was unconscious and was pinned under the car for a few minutes.

Dr. T. S. Hening

And daughter, of Jefferson, Va., in June

took a motor trip to Amherst and Nelson Counties, this State, and joined a camping party for trout fishing.

American Jews Extend Consumptive Relief Work.

To enlighten the Jewish people as to the means of safe-guarding themselves against tuberculosis, the Jewish Consumptive Relief Society of Denver will shortly start a country-wide campaign with an idea of extending its activities to include not only the cure but the prevention of tuberculosis. In large cities, "Keep Well" circles will be organized and they will be addressed by prominent physicians in frequent public gatherings. Free examinations will also be given those who suspect that their lungs are affected.

Dr. and Mrs. J. C. Coulter

And daughter, of Charlottesville, Va., recently visited the doctor's parents at his boyhood home at West Sunbury, Pa. They were there during commencement week of the West Sunbury Academy, where Dr. Coulter received his academic education, and the reunion with old classmates and friends proved a most enjoyable occasion.

Dr. and Mrs. J. F. Geisinger

And son have returned to their home in this city after a motor trip to Virginia Beach.

Dr. Allen W. Freeman,

Formerly of this city and assistant State Health Commissioner of Virginia, but more recently Commissioner of Health of Ohio, has been appointed resident lecturer on public health administration in the Johns Hopkins University School of Public Health, and assumed his new duties the first of this month. He succeeds Sir Arthur Newsholme, K. C. B., who is returning to England.

Dr. Klotz Resigns to Go to Tennessee.

Dr. Walter C. Klotz, medical director of Blue Ridge Sanatorium, near Charlottesville, Va., has tendered his resignation to take charge of the National Sanatorium for tuberculous ex-soldiers at Johnson City, Tenn.

Dr. D. L. Kinsolving,

Of Abingdon, Va., is at present at Baggs, Wyo., but expects to return to Virginia shortly.

Dr. M. L. Dalton

And son, of Floyd, Va., have returned home after a vacation visit spent with Dr. J. B. Dalton, in this city.

Dr. J. R. Couch,

Who has for some years practised at Alberta, Va., has moved to 304 West Main Street, this city, where he will continue the practise of his profession.

Visit Potter Clinic.

Drs. Rufus Kight and C. J. Andrews, of Norfolk, Va., recently attended the Potter Maternity Clinic, at Buffalo, N. Y.

Nurses' Training Schools in Government Hospitals.

Owing to the great demand for nurses throughout the country and especially in government hospitals, the U. S. Public Health Service has decided to open training schools in such of its hospitals as may be fitted for this work. As a beginning, schools will be opened in the hospital at Fox Hills, Staten Island, New York, and at Ft. McHenry, near Baltimore. Schools will be opened in other hospitals as conditions permit.

The Second International Congress of Eugenics

Is to be held at the American Museum of Natural History, New York City, September 22-28, 1921, inclusive. Dues for sustaining memberships are \$100, and for active memberships \$5. For any information, address Dr. C. C. Little, secretary-general, American Museum of Natural History, 77th Street and Central Park West, New York City.

Dr. Sydney J. Baker,

Of South Richmond, Va., sailed early this month for England, to visit his mother who lives just outside of London.

Dr. C. Augustus Simpson,

In charge of the Washington, D. C., Radium and X-ray Laboratory, announces the removal of his offices to 1610 Twentieth Street, Northwest, that city.

Clinic at Emporia.

In the clinic held at Emporia in June, more than fifty children were operated on for adenoids and defective tonsils. Dr. E. T. Gatewood, of Richmond, was the operating surgeon, and was assisted by Drs. H. B. Ma-

hood, G. M. Naff and M. H. Tredway, of Emporia, and a staff of nurses.

Doctors Among Directors of Va. Peanut Exchange.

Among the nineteen directors just nominated to the Va. Peanut Exchange are Drs. C. J. Bradshaw, Carrsville, Va., and I. A. Ward, Belvidere, N. C.

The American Pediatric Society,

At its annual meeting held at Swampscott, Mass., in June, elected Dr. Maynard Ladd, of Boston, president, and re-elected Dr. Howard C. Carpenter, of Philadelphia, secretary-treasurer.

Dr. George A. Piersol

Has tendered his resignation as professor of anatomy at the University of Pennsylvania, after a service of thirty years.

The American Medical Editors' Association,

At the annual meeting in Boston, elected Dr. Frank C. Lewis, New York, of INTERNATIONAL JOURNAL OF SURGERY, president, and re-elected Dr. Joseph J. MacDonald, Jr., New York, of AMERICAN JOURNAL OF SURGERY, secretary-treasurer.

Italians in Brooklyn to Build Hospital.

A campaign was begun in June for the erection of an Italian hospital in Brooklyn, N. Y. An Italian society has already purchased a building for this purpose at a cost of \$200,000. Italians now own three of their own hospitals, two in New York and one in Pittsburgh, while still another is in course of construction in San Francisco.

Dr. and Mrs. Paul Redd,

Of Highland Park, this city, were recent guests of friends at their camp on York River this State.

Dr. and Mrs. H. A. Bullock

Have returned to their home in this city after a motor trip to Norfolk and Virginia Beach.

Dental Clinics in Wise County.

During a series of dental clinics recently held in Wise County, 476 children were treated and all had their teeth cleaned. There were 285 extractions and 950 teeth were filled. The expense was less than \$500 for the period and the receipts from those able to pay a small fee just about covered the cost of the clinics.

Dr. L. P. Michaels,

Of Rio Vista, Va., has announced his candidacy as an independent for the House of Delegates at the November election.

American Nurses Memorial in France.

Of all the permanent memorials of the Great War that Americans have left in France, none gives more promise of growing in importance than the new Florence Nightingale Training School for Nurses established at Bagatelle, in the beautiful Bordeaux suburb of Talence. It is dedicated to the memory of the 284 American nurses who gave their lives in the war and was given by the nurses of America, through small individual subscriptions.

More Deaths by Accident than Cancer.

According to a report just made public, accidents kill more people in the United States in one year than the much dreaded scourge of cancer. During 1918, the last year for which reports are now available, there were 83,852 deaths from accidents. The largest number of these were from railroad and street car accidents, and the next largest from falls. It was shown that automobile fatalities have increased tenfold during the past decade while the "safety first" movement has appreciably reduced the number of deaths on railroads and street cars.

Dr. Livingston Farrand

Has been elected president of Cornell University to succeed Dr. Jacob G. Schurman, resigned. Dr. Farrand was for some years executive secretary of the National Association for the Study and Prevention of Tuberculosis and, since 1917, has been connected with the work of the American Red Cross.

The Virginia Tuberculosis Association,

With headquarters in Richmond, in June received its charter from the State Corporation Commission to carry on the work of prevention and relief of tuberculosis in Virginia and to promote educational publicity on tuberculosis. Seventy-two directors were appointed, with Capt. W. W. Baker, of Chesterfield County, as president, and Dr. Roy K. Flannagan, of this city, as secretary.

This association also has charge of the T. B. Christmas Seals in this State. It has placed with the National Tuberculosis Association already its 1921 order for 18,000,000 Christmas Seals. In Virginia, alone, last year, the sale of these seals totaled \$50,000. Commencing

the first of this month, the association has inaugurated a program whereby permanent tuberculosis associations will be established in every county of the State. These will care for the sale of the Christmas Seals and direct the local tuberculosis program for the coming year.

Court Upholds Power to Quarantine for Venereal Disease.

According to *Public Health Reports*, the power of health authorities to quarantine persons reasonably suspected of being sources of infection of venereal disease is upheld by the Court of Appeals of Alabama, as evidenced by the following case: A woman was arrested on the charge of vagrancy, and was quarantined by the health officer of Birmingham. She brought habeas corpus proceedings to secure her discharge, but the court held that "the health officer, under the facts, was authorized to consider petitioner within the class of those reasonably suspected as being sources of infection," as provided by statute.

New Chair at University of Pennsylvania.

We understand that a chair of applied endocrinology has been created at the University of Pennsylvania, and that Dr. Charles E. de M. Sajous has been appointed to same.

Peking Union Medical College,

Which has been erected by the China Medical Board of the Rockefeller Foundation, is to be dedicated at ceremonies to be held during the week of September 15-22. At this time will be held also a medical conference to which scientists from America, Europe and the Far East have been invited. Dr. Henry S. Houghton will be inaugurated as director of the college at this same time. The institution comprises not only the medical school, but also a 250-bed hospital, with out-patient clinics, a nurse training school and a premedical school—an institution of junior college grade with a distinct faculty and group of laboratory and classroom buildings.

Get Your Gambusia!

So much confidence does the State Board of Health place in gambusia as a means of freeing ponds of mosquitoes, that it has offered to furnish gambusia free of charge to everybody who owns a pond and sends container for gambusia to their offices in Richmond. Gambusia is a fish of the minnow family and lives

by eating the eggs of mosquitoes. In this way they will kill off future generations of mosquitoes.

Dean, University of Michigan Medical School.

Dr. Hugh Cabot, formerly of the Harvard Medical School, but who has been head of the department of surgery in University of Michigan Medical School, since the fall of 1919, has been made dean of the school of medicine, succeeding Dr. Victor C. Vaughan, whose resignation after a service of thirty-four years, we recently announced.

Successor to Dr. Thayer.

Effective July 1, Dr. G. Canby Robinson, of the class of 1903, Johns Hopkins Medical School, but now professor of medicine and dean of the medical faculty of Vanderbilt University, Nashville, Tenn., has been borrowed to be professor of medicine at Johns Hopkins Medical School and physician-in-chief to Johns Hopkins Hospital, succeeding Dr. William S. Thayer, recently resigned.

Dr. William A. White,

Medical superintendent of St. Elizabeth's Hospital, Washington, D. C., was elected president of the American Psychopathological Association at its recent meeting.

The International Journal of Gastro-Enterology,

Under the editorship of Dr. A. L. Soresi, of New York City, made its initial appearance in July. It will be the aim of those in charge to make the journal useful to the specialist as well as the general practitioner and to keep the journal 100% scientific. The publishers are to be congratulated on the excellent appearance of this first issue as well as on the material incorporated in it.

State Health Commissioner of West Virginia.

Dr. William Thornton Henshaw, of Martinsburg, W. Va., has been appointed State Health Commissioner of West Virginia.

Re-opening of Manila Segregated District Proposed.

We note from the JOURNAL OF THE P. I. MEDICAL ASSOCIATION, that the Council of Hygiene is considering the suggestion of re-establishing the segregated prostitution district of Manila, which was closed in 1918. The proposition aims to reduce the number of cases

of venereal diseases, which are said to be on the increase since closing houses of ill repute in that city.

Distribution of Physicians Necessary.

The JOURNAL OF THE A. M. A., referring to a statement made at the meeting of the American Institute of Homeopathy to the effect that the United States was suffering from a shortage of 25,000 physicians, states that there is no shortage as far as numbers are concerned, but that the problem is one of distribution. There is now an average of one physician to every 726 people, but physicians are not attracted to the rural districts where they cannot, or think they cannot, make a living.

Bust of Morton in Hall of Fame.

On October 16, in celebration of the Diamond Jubilee Anniversary of Morton's First Public Demonstration of Ether Anesthesia, a bronze bust of Dr. Wm. T. G. Morton will be placed in the niche assigned to him in the Hall of Fame, by American Anesthetists. Contributions for this fund should be sent Dr. F. H. McMechan, Secretary-Treasurer of Associated Anesthetists, Lake Shore Road, Avon Lake, Ohio.

Industrial Research Laboratories.

Research facilities and the development activities of American industries are to be described in the forthcoming revision of *Bulletin of the National Research Council*, Number 2, "Research laboratories in industrial establishments of the United States of America." Only 300 such laboratories were listed in the first edition but it is hoped that several hundred new names will appear in the revision and that a more nearly complete reference list will thus become available. The general demand for the first edition of the Bulletin shows the wide interest in this subject, and the importance of having every laboratory which devotes even a portion of its time to research properly listed.

The Council requests information from directors of research who have not already supplied it. The following data are wanted:—Name and address of firm and address of laboratory; name of director of research; number on laboratory staff (classified as chemists, engineers, bacteriologists, etc.); approximate proportion of time spent on research; chief lines of research; unusual features of equipment; research laboratory space; date of organization of research laboratory and annual

expenditure for research. Confidential information is not desired.

This material should be furnished as promptly as possible to the Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

Medical Library Association.

The twenty-fourth annual meeting of the Medical Library Association, whose membership includes all of the larger medical libraries of the country, and a large number of individual members, consisting of those interested in furthering medical library work, was held in Boston June 6, 7, 8, 1921. The business meetings of the association were held in the Boston Medical Library. In addition to the address of the president, the program contained the report of a committee on standard classification, and the system used in the Boston Medical Library, and this as explained by the chairman, Mr. James F. Ballard, was adopted, as being the most practical solution for meeting the perplexing problems of classification. Several interesting and instructive papers were read.

In addition to the regular program, visits were made to the various libraries in Boston. In each case the members of the association were shown over the buildings and the various points of interest were explained. Visits were made to the Harvard Medical School Library, Boston Public Library, Harvard College Library, Treadwell Library, and the Boston Athenaeum Library. Of particular interest was an exhibit of rare medical items from the library of Dr. Edward C. Streeter, of Boston, spread in the exhibition room of the Boston Public Library. The exhibit was specifically epidemiological, the essential literature on fevers from Hippocrates to Lancisi, with a few sections such as plague, syphilis, venesection superadded.

The permanent headquarters of the Medical Library Association are in the Medical and Chirurgical Faculty Building, at 1211 Cathedral Street, Baltimore, Maryland.

Mosby's Catalogue.

The C. V. Mosby Company, medical publishers of St. Louis, have issued a 96-page illustrated catalogue of their medical, nursing, pharmaceutical and dental publications. Many books of real worth are listed in this.

Dr. and Mrs. S. B. Cary,

Of Roanoke, Va., were recent visitors at Gloucester, Va.

Dr. and Mrs. Stuart McGuire,

Of this city, are home again after a short visit to Canada in June.

Wanted

To buy an improved Virginia farm of from 50 to 100 acres, preferably located in Valley of Virginia, good roads, close to good schools, etc., and near a thriving town that would make a good location for a doctor in active practice, age 40. Address communications to "S," care this journal.—(Adv.)

Obituary Record

Dr. William B. Daniel,

A leading physician and citizen of Prince George County, Virginia, died at the home of a son in Richmond, June 12, his death being attributed to the infirmities of age. Dr. Daniel was 81 years of age and a graduate of the Medical College of Virginia in 1863. He was one of the best known citizens of Southside Virginia and represented Prince George and Surry Counties in the House of Delegates for two terms. He was a supervisor of Prince George County for a number of years, a member of the county board of health and honorary president of the Prince George County Medical Society. His widow, several children and a large family connection survive him.

Dr. Daniel was active in church work and had for forty years been a deacon in the Baptist Church at Carson. He was buried with Masonic honors.

Dr. Wallace Calvin Abbott,

Pioneer in the field of alkaloidal medicine, founder and for more than thirty years president of the Abbott Laboratories, died at his home in Chicago, July 4, after being in bad health for several years. He was born in Bridgewater, Vermont, in October, 1857, and, upon completion of his academic education, studied medicine at the University of Michigan, from which he graduated in 1885, after which he located in Chicago and engaged in the practice of his profession.

Dr. Abbott was a man of great ability and charm of manner. He was co-author, with Dr. William F. Waugh, of several medical books and was editor-in-chief of the *AMERICAN JOURNAL OF CLINICAL MEDICINE*. His widow and a daughter survive him.

Fifty-second Annual Session, Lynchburg, Va., October 18-21, 1921

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Original Communications

THE LATE RESULTS OF A SERIES OF HEAD INJURIES.*

By C. C. COLEMAN, M. D., F. A. C. S., Richmond, Va.
From the Department of Neuro-Surgery, Hospital Division Medical College of Virginia (Head Trauma Series, 1920).

This paper is concerned with a study of fifty-two patients with symptoms of at least twelve months' duration, attributed by the patient in every case to previous injury to the head. The average time intervening between the injury and the period of observation was approximately two and a half years.

A critical analysis of the series was undertaken primarily as part of a study to determine the type of immediate treatment of head injuries, which will not only insure a low mortality, but also give the patient the best protection from late complications.

Patients complaining of an old brain injury frequently present no tangible evidence of the lesion which is in most cases as much a cause of real disability as many of the more obvious lesions in other parts of the body. The greatest difficulty in the interpretation of symptoms of these patients as a class, arises from the acquisition by them of what appears to be a marked functional disturbance, but it is not accurate to classify such patients as neurotics because of inability to demonstrate the underlying cerebral pathology. The frequency with which the syndrome of headache, vertigo, dispositional changes and even epilepsy develops after head injuries may justify the assumption that the injury produced certain organic changes in the brain. It may be that patients with such pathologic changes more readily develop neuroses and have a heightened susceptibility to the influence of suggestion which in the beneficiaries of compensation laws may be very troublesome.

In the present report, seven patients are eliminated because of a lack of opportunity for detailed study. Certain general observations on this omitted group are included with the discussion of the remaining forty-five who were studied under more favorable conditions.

This latter group includes forty-one men and four women. Thirty-seven of the patients had received head injuries such as are common in civil or industrial life, while seven had been wounded by projectiles during military service.

According to the histories as given by the patients, the primary injury varied from a blow without demonstrable fracture of the skull to a destructive lesion of the brain substance itself with loss of extensive areas of scalp and bone. The incidence and duration of primary unconsciousness in injuries without demonstrable fracture and those with extensive trauma is practically the same.

The practical classification of Ingham¹ by which the patients are divided into three groups based upon the immediate effects of the injury upon consciousness is adopted.

Group 1. Consciousness retained.

Group 2. Consciousness lost for less than 24 hours.

Group 3. Consciousness lost for more than 24 hours.

This classification, while focusing attention upon only one immediate effect of head injuries, is very satisfactory in view of the meager primary observations often made on this type of lesion.

Group 1. There were eight patients in whom unconsciousness did not follow their injuries. All of these patients complained of symptoms referable to cerebral disturbance, and the complaints ranged from major epilepsy to general nervousness. One patient of the group had an extensive penetrating injury of the frontal region with retained foreign bodies and, at the time of study, was having severe headaches and major epilepsy. The remaining seven patients of the retained consciousness

*Read at the meeting of the Southern Surgical Association, Hot Springs, Va., December, 1920.

group had injuries in the following regions: 3 parietal, 2 occipital, and 2 frontal. In this group, although some of the patients were severely injured, the concussion phenomena must have been absent, inasmuch as the immediate loss of consciousness from head trauma is usually ascribed to it.

The incidence of late symptoms of this group is high, however, as shown by the development of epilepsy in three, annoying headache in seven, and a residual focal symptom in 1 (hemiparesis).

Group 2. Nineteen patients were unconscious from a few minutes to about twenty-four hours after the injury. In the absence of neurologic data based on a study of these patients at the time of injury, it is impossible to assign the causes of unconsciousness in some of them beyond the time when concussion effects should have disappeared. The duration of the effects of concussion alone is not always easy to determine, however, and little is really known of the degree or variety of the cerebral disturbance which concussion may produce.

Sixteen of these patients complained of troublesome headache, several had disturbance of memory and changes of disposition, and five had epilepsy.

Group 3. Eighteen of the patients of the series were unconscious immediately following the injury for more than twenty-four hours. The familiar symptom group of head trauma—vertigo, headache, lapses of memory, and inability to concentrate—was present in most of the patients, and nine have had epileptic convulsions after the recovery from the early effects of the injury. The prolongation of unconsciousness in this group beyond the twenty-four hour period and in some cases for more than two weeks must have been due to some structural changes in the brain in excess of those usually attributed to concussion. Hemorrhage and cerebral edema were the most probable results of the violence done to the brain tissues in these patients.

The unconsciousness initiated by the concussion was doubtless maintained by the development of edema and compression. In some cases of this group there was destruction of brain tissue by a penetrating missile. Nine, or half of them, had early operations and five of the series had cranial defects. Three patients of this group have permanent focal symptoms indicating local brain destruction.

A number of general observations have been made upon the series as a whole. Many of the patients stated that they were unconscious for a few minutes only following the injury, but impairment of memory for varying lengths of time was common, and headache and vertigo were almost invariable during convalescence.

All of the patients of the three groups came for treatment of disabling symptoms of one kind or another, usually headache, vertigo, and other late manifestations of the trauma syndrome. Psycho-neurotic complexes and anxiety states were found in only a small percentage of the cases. The symptoms complained of by the patient during the period of observation were found in patients who had received apparently mild as well as severe injuries, and often there were relatively slight late symptoms in patients with extensive injuries.

Those patients with destructive lesions of the brain and permanent focal symptoms showed less general subjective disturbances than many others who had no demonstrable lesion. Twenty-three, or about half of the cases, had a fracture of the skull. Two of the eight gunshot patients had epilepsy and one other patient with a penetrating injury gave a history of severe general convulsions. Early operations had been done on fifteen patients and of these three had epilepsy. The remaining thirty had not been operated upon for the injury, and of these fourteen had epilepsy.

Among four patients who had primary subtemporal decompression, presumably for basal or bursting fracture, none had epilepsy. Eleven patients of the series showed an increased and persisting intracranial tension, which was recognized by blurring of the discs and a definite rise of spinal fluid pressure. Hyperactivity of the deep reflexes was the rule in the series, and it appeared to be true that involvement of the deep reflexes of the upper extremity indicated a greater cerebral disturbance than that of the leg alone.

In attempting to assign a pathologic basis for the patients' late disabilities, the following early effects may be mentioned: concussion, hemorrhage and edema, destruction of brain tissue, cranial defects, and instability of the nervous centers antedating or caused by injury. Naturally, there must be a large speculative element in attributing a satisfactory physical basis to conditions which either disturb consciousness or produce late cerebral impairment,

and especially is this the case when the lesion affects a silent area, or when gross evidence of structural damage is absent. The problem is simpler when a non-silent area, such as the motor cortex or visual area, is involved.

It is interesting to note that nineteen patients of the series were beneficiaries of compensation laws, and in this study an effort has been made to determine the influence of compensation upon the degree of extension of disability. The method of compensation, by which the patient receives a weekly allowance during the period of disability, certainly seems to act as a stimulus to the prolongation of disability in those with pretraumatic nervous instability. Such patients may be influenced by relatives or others to believe that all head injuries produce incurable effects so that the problem often becomes one of great intricacy.

In other patients, between the fear of becoming helpless if work is resumed and compensation stops, and the certainty of State aid if disabilities continue, there is created a condition intolerable to the patient. The situation is often met by continued invalidism. This aspect of the subject is one of great economic importance, because the number of compensated cases in industrial life is rapidly increasing. In the series reported, several patients gave the impression that compensation was at least a subconscious obstacle to the return to work, but by far the large majority were anxious to resume their occupations, and were discouraged by the persistence of disabling symptoms. The results of psychoanalysis of these patients were inconclusive. Similar disturbances were found in the non-compensated cases with injuries at least grossly equivalent. The payment of compensation does not always terminate these traumatic neuroses which have been designated "Conduct disorders" by Dana², and "Compensation Hysteria" by the Germans.

Some point may be given to the discussion of this phase of the subject by a comparison of the compensation statistics of Germany and Denmark prior to the war. In Germany, less than 10 per cent. of injured patients with functional nervous disturbance ever returned to work, while in Denmark about 93 per cent. of such patients resumed their occupations.³ The German compensation laws were similar to our own, while in Denmark the patient receives a prompt and final cash compensation after in-

vestigation by a disability board. The Denmark law appears to possess some advantages, provided competent study is made of the patient's disability before the final settlement is made.

It has been interesting to learn from some of the histories that the patient was permanently impressed by the physician's advice as to the necessity of leading a quiet life, free from excesses of all kinds, avoidance of fatigue, the hot sun, tobacco and alcohol. The fact that the patient had often conducted his life along lines exactly the reverse of those contemplated for his future, apparently served to erect a psychoneurotic addition to an organic injury. Briefly stated, the advice usually given to and sometimes followed by patients with head injuries may tend to produce the very condition of functional disability which the patient is most anxious to avoid. It appears desirable that advice to recently injured patients as to future living habits be formulated upon a study of the patient as well as the character of the injury.

The incidence of post traumatic epilepsy is variously estimated. Neuhof⁴, in a recent article, says that he has had "statements of epilepsy" from three patients in a series of 175 head cases observed or operated upon in France. This surprisingly low percentage may be compared with 12.5 per cent. reported by Frazier and Ingham⁵ from the Cape May series, and 70 per cent. from the reports of Villandre⁶ in 1917.

In the small series here reported there were seventeen cases or an incidence of 31 per cent. One observation which may be made on this phase of the subject is at least suggestive. Epilepsy or epileptoid states occurred in fourteen patients who received no operation for the injury (47 per cent.). In fifteen patients who had early operation there were three patients with this diagnosis (20 per cent.). In four patients who had had severe injuries and who had decompression operations early, epilepsy has not yet developed, although the injuries were received at least four years before these observations were made.

In two of the non-operated epileptics there were extensive fractures radiating into the sella, and these cases appeared to be benefited by pituitary extract. One epileptic patient had a foreign body removed from the frontal lobe, and cranioplasties were done in two. In

one case a negative exploration of the motor cortex was performed on account of suggestive focal symptoms. The present tendency appears to regard surgical operation as having a very limited field of usefulness in the treatment of traumatic epilepsy.

A brief reference will be made to the surgical treatment of the patients of this series. Cranioplasty was performed on six patients for deformity or subjective symptoms. The autogenous cranial transplant was used with satisfactory results in all cases. Subtemporal decompression was performed on three patients who complained chiefly of headache and who showed evidences of intracranial tension in the fundi, and who had a continuing elevation of spinal fluid pressure. These three patients were always relieved temporarily by lumbar puncture, and this observation suggested the propriety of a permanent decompression. A foreign body (shrapnel) was removed from the frontal lobe of one patient. Indurated, painful scars were excised in two cases. Syphilis was a complication in two of the patients. There was no evidence of the influence of focal infections upon their disability in any of these patients, although a routine search was made for the usual foci. Lumbar puncture was done routinely in all cases, provided a complete neurologic examination did not indicate excessive intracranial tension. A number of patients, with slight elevation of spinal fluid pressure, appeared to be considerably benefited by the withdrawal of spinal fluid, and this procedure is to be recommended for relief of the headache and general nervous tension which some of these patients have.

The treatment of old head injuries is difficult because so little is known of the real nature of the primary lesion and the subsequent development of the injury. The study of these old injuries with their crippling disabilities naturally leads back to a consideration of the primary treatment. It is in the early stage of the injury that proper treatment will give the best permanent results. The war experience tends to strengthen the belief that decompression operations are rarely needed for cerebral injuries. In dealing with gunshot wounds, the attention of the surgeon was focused primarily on the prevention of infection and the removal of foreign bodies. The question of compression from edema, if requiring special consideration, was by no means of equal importance

with that of infection. A study of the methods used with such brilliant results by Cushing and others in the early treatment of head wounds indicates that a decompressive effect was an essential though admittedly a minor result of every intradural operation for the prevention of infection and the removal of foreign bodies and devitalized brain. There can be no doubt that the thoroughness with which this work was done not only produced an astonishing reduction of primary mortality and early complications, but also diminished the number and severity of late complications. The decompressive effect consequent upon debridement and removal of foreign bodies, although a mere by-product of a larger purpose, may have been a very important factor in offsetting compression from meningo-cortical hemorrhage and cerebral edema. In the patients of this series in whom no primary operation was performed, the late disabilities have appeared to be in excess of those developing in patients who received some form of cerebral decompression.

By analysis of the series reported, and the application of the observations to a parallel series of acute head injuries observed during the same period, it has seemed that the study has yielded some results which must be left to a larger number of cases to confirm or contradict. The impressions derived from the study may be included in the following summary:

(1) The incidence or severity of the late results of head injuries cannot be predicted upon the type or degree of an acute injury.

(2) Epilepsy as a late complication in the series reported has lessened incidence in the cases with early operation. To have value, this observation must be substantiated by a larger series.

(3) Compensation has a direct influence upon the development of post traumatic neuroses, but this influence can be determined only by careful neurologic study.

(4) The prevention of late effects of head injuries is closely linked with the early treatment and after care.

(5) The pathology and evolution of many head injuries of civil life are as yet impossible of demonstration by present methods.

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LARYNGEAL TUBERCULOSIS WITH SPECIAL REFERENCE TO SUNLIGHT TREATMENT.*

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During the last few years, increasingly more attention has been paid to laryngeal tuberculosis and, as a result, greater importance is being attached to its diagnosis and treatment. It is no longer considered an inevitable or hopeless condition, but one that can be greatly ameliorated or even arrested, if detected and treated in the early stages. Laryngeal tuberculosis is the most frequent complication of pulmonary tuberculosis and, as our knowledge of this infection increases, the less excuse and occasion there will be for allowing such a serious condition to develop unrecognized, until there is extensive destruction of tissues and it becomes incurable. Even in the absence of any symptoms referable to the throat, justice to the patient demands a careful laryngeal examination. This is especially true in tuberculosis work. With inspection of the larynx a part of our routine physical examination, and with a better knowledge of early tuberculous lesions of the throat, we shall be able to recognize them at a stage when they are still amenable to treatment, and offer a better ultimate prognosis.

It is a mistaken idea that great skill is required in making a laryngeal examination. With the necessary equipment and a little practice one may soon learn to detect early lesions. A laryngologist will, of course, be able to make a more minute inspection, to recognize less marked changes from the normal and give a more accurate interpretation of his findings. At the same time, the impression obtained from personal observation is more vivid and lasting than one derived from another's report.

The frequency with which laryngeal tuberculosis accompanies pulmonary involvement varies according to the observer and the material studied. Dworetzkey¹ reports 25.6 per cent. out of five hundred cases examined at the Otisville Sanatorium, an institution for early cases. According to Robert Levy² the incidence is higher than this, he having found that in one-third of his cases there was laryngeal involvement. The report of the Phipps Institute³, noting the autopsy findings in subjects who had died of pulmonary tuberculosis, cited laryngeal involvement in 48 per cent. of the cases. In early cases of pulmonary tuberculosis, the percentage is usually much lower. In 200 cases examined at Blue Ridge Sanatorium, a diagnosis of laryngeal tuberculosis was made in twenty-five, or 12.5 per cent. Unless frequent examinations are made, it may happen in some cases that laryngeal tuberculosis occurs and, with the improvement of the patient's general and pulmonary condition, becomes healed without ever having been recognized or noted.

The symptoms of early laryngeal tuberculosis may be slight or absent, unless there is a definite or moderately advanced lesion. Hoarseness or huskiness is usually the first symptom noted by the patient; although weakness of the voice frequently exists for some time. In some cases a sense of dryness, tickling in the throat, and a constant desire to cough are the earliest manifestations. Minor⁴ describes as one of the earliest symptoms a sensation of a lump in the throat that cannot be swallowed. Pain may occur at any stage, though usually is complained of when there is ulceration and more or less diffuse infiltration. Hastings⁵ says that in his experience the forms of lesion that cause the most pain are deep seated infiltrations of the arytenoids and arytenoid-epiglottic folds. A recent case at the Sanatorium was one in the last stage of pulmonary tuberculosis. About four weeks before death she began to complain of a lump in the throat, dryness, slight hoarseness and pain which became so severe she finally refused all food, in spite of local anaesthetics and other measures administered to relieve this condition. Laryngeal examination showed only general pallor with a slight grayish elevation in the interarytenoid space. At autopsy the only lesions in the larynx that could be demonstrated macroscopically were grayish elevations in the

*Read before the Albemarle County Medical Society.

inter-arytenoid fold and a few scattered tubercles on the vocal chords.

Pallor of the laryngeal structures is usually considered the earliest sign, but its significance is frequently unrecognized because it is ascribed to general anaemia often associated with pulmonary tuberculosis. Probably the most common lesions are those in the inter-arytenoid space, which may be in the form of grayish elevations, or consist of only circumscribed patchy congestion. Associated with this there may be some injection and engorgement of the chords and arytenoids. On the other hand, as in tuberculous patients, the mucosa of the upper respiratory tract is often congested and the site of chronic catarrhal conditions which will frequently cause confusion. If, however, it be due to this it will soon clear up under local treatment. At this stage of simple hyperemia, laryngeal tuberculosis may under good hygienic conditions undergo resolution and repair. If the condition remains unrecognized and the patient is allowed to go on with the usually co-existing pulmonary condition untreated, infiltration continues, ulceration and sloughing take place, and the process sooner or later becomes disseminated. The epiglottis and other adjacent structures become involved. Of course, at this stage a diagnosis is easily made. In addition to the above pathological lesions, many others may occur, but the time allotted to this paper will not permit a more detailed description, and only the more common ones have been noted.

The treatment must be governed in a measure to suit the individual case. The general hygienic treatment is of the utmost importance. It is generally admitted that laryngeal tuberculosis is invariably secondary to a pulmonary lesion, and to attempt to treat the larynx without some attention to the general measures used in tuberculosis is a grave mistake. This can best be carried out in an institution where the patient is under constant supervision. The prognosis will ultimately depend on the extent of the pulmonary foci. If there is much softening and caseation, the patient should be confined to bed under the best hygienic conditions, and at the same time as much attention as necessary given to the treatment of the larynx.

It is interesting to note here that it happens not infrequently that patients are referred to a laryngologist for a throat examination; that

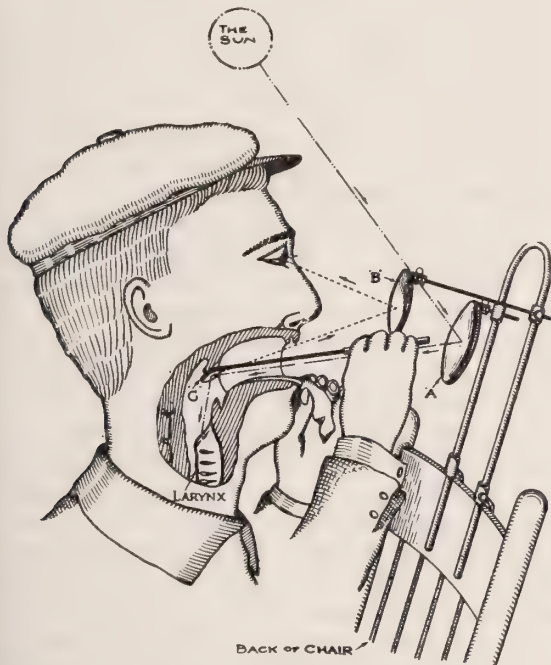
the condition of the larynx is the first sign to arouse suspicion of pulmonary tuberculosis, and leads to the patient being referred back with the advice to have a chest examination made, or to have the sputum sent to a laboratory. In other words, the throat condition may be the first *manifestation* of a pulmonary tuberculosis hitherto unsuspected.

Since the main object of this paper is to deal with sunlight treatment, other measures will merely be mentioned briefly. In every case, absolute rest of the throat and voice is of prime importance. Tuberculin therapy, alcoholic injections of superior laryngeal nerve, alkaline sprays, astringents, local anaesthetics, gomenol instillations, and similar preparations have a definite place in the management of such cases. A very important factor is the psychological management of the patient. In this as in all other phases of tuberculosis work, if the greatest good is to be accomplished, and the best results to be obtained, the patient must be made to feel that his individual problem is the one being considered. Lack of co-operation on his part will not only make the case difficult, but also defeat the ultimate outcome of the treatment.

Sunlight was first used in the treatment of laryngeal tuberculosis by Joseph Sargo⁶, physician-in-chief of the Alland Sanatorium at Davos, Switzerland. Knowing that good results had been obtained in surgical tuberculosis from sunlight treatment, and feeling the need of some more effective measures in laryngeal cases, he began to study this problem, and devised a system of mirrors for the purpose of reflecting the rays of the sun directly on the larynx. This method was simple but crude. The patient sat with his back to the sun, and held an ordinary hand mirror so as to reflect the sunlight upon a laryngeal mirror held in position in the mouth. This mirror reflected the sun's rays upon the diseased larynx. His results were excellent, but he realized that damage might be done to the laryngeal tissues by excessive application of heat rays and the consequent hyperemia. Various improvements were added to the apparatus until Mr. Verba⁷, of Colorado Springs, then a patient at Cragmore Sanatorium, suffering from a seriously diseased throat, determined to work out a method of treatment that would filter out and eliminate the heat rays from sunlight but allow the actinic violet, or ultra-violet rays to pass

into the larynx. He began a series of experiments and, after months of study with the physical properties of various reflecting substances, devised an alloy of aluminum and magnesium. This mirror was tried on his own throat and soon effected a cure. In many cases the reflection of the ultra-violet rays upon the diseased larynx soon relieved the pain, was soothing, and it was believed to have a stimulating effect on the formation of scar tissue.

The apparatus employed consists of the special mirrors for condensing and reflecting the sunlight upon the larynx, also an observation mirror of glass which is placed in front of the patient for the purpose of observing his own larynx and directing the sun's rays onto the diseased parts. The mirrors are arranged on a special apparatus which provides for adjustments and can be conveniently placed on the back of a chair just in front of the patient.



Sunlight strikes metallic reflector "A", where it is condensed and projected onto metallic laryngeal reflector "C", thence upon larynx. The image of larynx returns to observation mirror "B", and then to eye.

A metallic alloy mirror similar in size to that of an ordinary laryngeal mirror is held in the mouth by the patient. At the same time the tongue is held out with a gauze handkerchief. By observing his throat in the glass observation mirror, the patient soon learns to reflect the sun's rays from the metallic alloy mirror on the chair to that in his throat and then on

the larynx. After a thorough explanation of what is to be done and with a little practice the patient soon learns to treat his own throat.

Short exposures must be made at first, beginning usually with one-half minute twice daily and gradually increasing until two and three minute periods have been reached. Great care must be exercised to avoid too long exposures until the larynx has become accustomed to the light, otherwise some hyperemia and pain will develop. In a personal communication, Dr. Charles E. Atkinson², of Banning, California, states that he has found the sunlight treatment quite helpful in certain cases of throat tuberculosis, but that it is very important to guard against unduly prolonged treatments. He thinks that short exposures are stimulating, but too long exposures have a tendency to break down tissue. One of the greatest difficulties we have had to contend with is the cloudy weather which prevails in the East. Especially is this true throughout the winter season. If, after several exposures have been made and the treatment is well under way, there come several days in which no direct sunlight is available, the treatment must, of course, be discontinued, only to be started again with minimal exposures.

While our experience with sunlight treatment has been limited, our results have been most encouraging. Out of seven cases treated at the Blue Ridge Sanatorium, four have shown a definite improvement. In the remaining three no improvement was noted, but their chest conditions were well advanced and their general condition so unfavorable that it would not permit their sitting up for the successful and practicable application of the treatment. It is well to note that out of the four that were benefited two had only slight lesions of the throat, but were suffering from active pulmonary lesions. The remaining two had extensive ulceration and destruction of the laryngeal structures and extensive pulmonary lesions as well.

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OPIMUM—ITS USES AND ITS ABUSES.*

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We, as medical men, lay so much stress upon diagnosis and our diagnostic ability and skill that at times, I fear, we pay too little attention to treatment; more especially not giving due credit to the drug or to the treatment instituted.

I have selected for discussion tonight one drug, and I am sure this one product of the plant kingdom has relieved more suffering and pain than all other drugs, and all other remedial measures combined. If the entire materia medica at our disposal were limited to one drug, that is, if we had to choose only one drug from the entire lot, I am sure the majority of us would choose opium; and I am convinced that if we were to select, say half a dozen of the most important drugs in the Pharmacopeia, we should all place opium in the first rank.

In selecting this subject for the evening, I trust that none present will misconstrue my motive and think for a moment that I am trying to mitigate the importance of a thorough diagnosis, or am advocating the use of this remedy promiscuously, or in every case of pain; for I do realize its baneful and habit-forming qualities.

The medical properties of poppy-juice date from a remote period, and yet not so far back in antiquity as we might expect, for the earliest definite and authentic references to it are found only in the Greek and Latin literatures.

The original home of the poppy was in Asia Minor. From there it was carried to Greece at a later period.

The name opium is derived from the Greek word meaning juice. It is supposed to have been brought to China first by the Arabs, who are known to have traded with the southern parts of the empire as early as the ninth century. Later, the Chinese began to import the drug in their junks from India. At that time, it was used by them exclusively as a remedy

for dysentery. It was not before the second half of the eighteenth century that the importation of opium began to increase rapidly through the hands of the Portuguese, and a little later through the famous East India Company. In 1770, the English established an opium depot in Lark's Bay, south of Macao, and the traffic rapidly increased, so that very soon the Chinese authorities began to complain, and in 1820 an edict was issued forbidding any vessel having opium aboard to enter the Canton River. A system of contraband followed, then political friction between England and China, and the so-called Opium War, which culminated in the Treaty of Nankin (1842) by which five ports of China were opened to foreign trade, and in 1858 opium was admitted as a legal article of commerce. By that time, the vice of opium smoking had spread like a plague over the gigantic empire, and became so deeply rooted that, in spite of innumerable edicts and decrees, all efforts to check its growth have been powerless. A poor sort of missionary work by the enlightened West among the heathen Orientals! Today, opium cannot be grown in China, nor legally imported; there is, though, quite a lot smuggled in through Japan.

Since the time of Galen, the use of opium was continued in a disguised form in various concoctions and confections containing so many ingredients that the distinction between the important and useless could not be discovered, and the value of the drug was overlooked, except by a few brighter minds.

The famous physician of the middle ages, Philippus Aureolus Theophrastus Bombast von Hohenheim, commonly known as Paracelsus (1493-1541), owed much of his success to the bold way in which he administered opium to patients. He is said to have carried opium in the pommel of his saddle and called it the "stone of immortality." His followers were as enthusiastic as himself over the virtue of opium. Platerus of Basle, in 1600, strongly recommended it, and Sylvius de la Boe, a famous Dutch physician, declared that without opium he could not practice. The celebrated chemist and physician, Van Helmont, about 1640, used it so frequently that he was called Doctor Opiatus, and Sydenham, about 1680, writes that "among the remedies which it has pleased Almighty God to give to man to relieve his sufferings, none is so universal and so efficacious as opium."

*Read at the regular meeting of the Church Hill Medical Society, Richmond, Va., January 27th, 1921.

The name "laudanum," attributed to Paracelsus, is supposed to be derived from the Latin "laudandum," "something to be praised."

Among the alkaloids of the morphine-codeine group not contained in opium, but prepared artificially in the laboratory, are:— (1) Heroin, or diacetyl morphine. (2) Dionin, or ethyl-morphine hydrochloride. (3) Peronin, or benzyl-morphine hydrochloride. (4) Apomorphine, derived from morphine by dehydration. (5) Apocodeine, derived from codeine by dehydration.

Opium contains a number of alkaloids, the most important of which are morphine, narcotine, codeine, thebaine, papavarine, narceine, laudanine, pseudo-morphine, cryptopine, and an acid,—the meconic acid. Of all of these alkaloids, morphine and codeine demand the closest investigation and study. Morphine, the most important of all these constituents, appears as colorless, or white, shining crystals, or crystalline powder, odorless, of bitter taste, alkaline reaction, slightly soluble in cold water, soluble in five hundred parts of boiling water, in one hundred parts of alcohol, and thirty-six parts of boiling alcohol.

Codeine is most generally found in combination with meconic acid, and may be separated from morphine by an alkaline solution. It occurs in white or yellowish-white translucent rhombic prisms, is odorless and of slightly bitter taste. It is soluble in eighty parts of water at 59 degrees F., in seventeen parts of boiling water, freely soluble in alcohol and chloroform, and soluble in about six parts of ether.

Heroin, or diacetyl morphine, like codeine, is less strongly hypnotic and analgesic than morphine and is more of an excitant to the spinal cord. It differs from codeine, however, in being relatively far stronger as a respiratory depressant, acting, in fact, much more powerfully on the breathing centers than morphine itself. There is a decided increase in the respiratory rate, with prolongation of inspiration and an increase in the force of expiration. Eliminations of bronchial secretions are thereby promoted, thus aiding in the relief of dyspnea (Hyams). Habit formation is decidedly easy in the case of heroin, though, when the habit has been acquired, it can often be more readily broken—by substitution of codeine—than in the case of morphine. Though heroin is used chiefly to allay cough, Bastedo's systematic clinical trials, in which the effects of 1/12 to 1/6 grain (0.005 to 0.01 gm.)

of heroin hydrochloride were compared with those of doses of pure codeine three times as large, appeared to show a superiority of the latter, both in allaying cough, overcoming pain, and promoting sleep (in pulmonary tuberculosis). Nausea and constipation were also noted in several instances, though, as compared to morphine, heroin is reputed to have less effect in checking secretions and peristalsis.

Opium may be classified as a hypnotic, a narcotic, an analgesic, an antispasmodic, a tonic, a diaphoretic, and a diuretic. If opium is taken in small medicinal doses, the first effect noticeable is that of a general feeling of quietness and rest. Most usually we find a decline in the activity of the mental faculties, although it has been repeatedly observed that in some persons, who have a peculiar idiosyncrasy against this drug, the mental faculties may become markedly excited. After a short time, varying according to the peculiarities of the patient, the hypnotic influence of opium is observed, the sleep produced being either light and natural, or of a heavy and stuporous character, depending to a great extent upon the previous condition of the patient, the mode of administration, and the amount of the drug taken. After the hypnotic influence of this drug has worn off, we may observe quite frequently a state of depression pointing most markedly towards the gastro-intestinal tract, and such symptoms as headache, nausea, vomiting, and even purging have been repeatedly observed to follow the administration of even very small doses of opium. If these small doses be continued over a longer period, all these symptoms may become exaggerated, and we may reach a stage in which administration of small doses of opium may either prove very harmful or be of no benefit at all. When medium large doses are taken, the symptom of well-being becomes markedly exaggerated, and we may then find a great similarity in the symptoms, with effects similar to those resulting from the taking of cannabis indica—visions of a pleasant character, dreams during which images and scenes which have a tendency to revive the patient's spirits have been quite frequently noted—and it is especially this stage which helps the patient, not yet a fully confirmed opium fiend, to fall into the habit of taking the drug regularly.

If very large doses of opium are taken, the primary symptoms may be entirely lost, the patient immediately relapsing into a deep

sleep, markedly resembling coma. We observe then a flushed face, a pulse bounding and strong, skin usually dry and warm, although at times cold and clammy, respiration slow and stertorous, and the significant symptom of opium-poisoning—namely, contracted, pin-point pupils. All these symptoms resemble to a great extent cerebral congestion. The coma is deep, and it is only with the greatest difficulty that the patient can be roused, only to again relapse quickly into this former state. If the patient is permitted to remain in this condition, he very soon becomes prostrated, the coma grows still deeper—in fact, so deep that arousing the patient is an impossibility—the respiration becomes slow and feeble, the face is pallid, the pulse becomes rapid and more feeble, the skin is cold and clammy, and the pupils, which during the entire stage have been markedly pin-point, suddenly dilate—the symptom of death. If death occurs, it is always due to failure of respiration. This is the usual course of a typical case of acute opium-poisoning, but it is by no means the only effect observable when dealing with toxic doses of opium.

Upon respiration opium has a decided influence. It is a direct poison to the respiratory centers. The formation of carbonic acid gas, so peculiar in opium-poisoning, is due to the direct influence of opium upon the muscles, as may be recognized by the fact that during coma an increase of the gas has been observed, while in such cases of opium-poisoning, during which violent movements are observed, the amount of carbonic acid gas is decreased. Contraction of the pupil, always present in opium-poisoning, is due to a stimulation of the oculomotor nerve-centers, the dilatation observable just as death ensues being caused by paralysis of these centers.

The question of the action of opium upon the kidneys is one still under discussion, but practically it is recognized that wherever there is a decrease in the amount of urine, as, for example, in chronic Bright's disease and uraemia, opium is contraindicated. Upon the intestines opium acts in small doses by diminishing the peristaltic movement; in large doses, by increasing it.

Opium may be satisfactorily administered either by fluid or solid preparations, generally by the mouth. Where relief of only moderately severe pain is required, small doses of tincture of opium or codeia, gr. $\frac{1}{8}$ to $\frac{1}{2}$, may

be used with success. In severe pain, on the other hand, hypodermic injection of morphine is advisable, a much more prompt effect being produced, with relatively less influence in arresting intestinal activity and impairing appetite. Where diaphoresis is the end in view, Dover's powder, or some other combination of opium with ipecacuanha, is generally given preference. For astringent effects, opium should be administered in small doses in the form of the camphorated tincture (paregoric) or in conjunction with chalk or one of the true astringent drugs. If a prolonged sedative as well as astringent effect on the bowels or stomach is to be procured, opium pills are particularly suited, not being dissolved and absorbed as rapidly as the fluid preparations of the drug. Suppositories of opium and belladonna may be advantageously used in dysentery and irritative disease of the rectum. Where, on the other hand, a hypnotic effect is demanded, opium may be advantageously given with other soporific drugs, such as chloral hydrate, veronal, or trional, its unpleasant by-effects being therefore reduced, owing to the relative smallness of the dose employed. In general, opium or morphine, used by the mouth, should be taken some time after meals.

There is probably no drug which has such wide range of usefulness, and no drug which is more generally abused, than opium or its alkaloid morphine. The tendency of the physician to use or prescribe these drugs as a ready means to overcome pain and many other symptoms especially benefited by opium has only too often proved the first step towards the acquisition of a habit, destroying its influence.

Again, the physician with a hypodermic syringe always at hand is only too ready often to administer the alkaloid, obtaining temporary relief, satisfying for the time being the patient, without any thought that this dose may be the beginning of a career of morphomania. Paregoric, or the camphorated tincture of opium, is a household remedy and, lacking in few homes (owing to the ease with which it may be obtained), is made use of on the slightest occasions. Again, infant remedies, such as patent medicines and proprietary drugs, employed as soothing syrups, contain a greater or smaller percentage of the preparations of opium. Despite its general use, people at large are entirely ignorant of the maximum dose permissible or of the ill effects and results following its administration. A child suffering

from colic or crying becomes soon quiet by the administration of paregoric or one of the "soothing syrups." The administration of two or three doses, to achieve this result in a short time, is by no means rare. As a result the child becomes quiet and falls asleep—a sleep from which it may never awaken.

Again, insomnia, so frequently found in brain-workers, men of intellect, calls for the hypnotic influence of opium. Finding that the desired result is quickly obtained after its ingestion, on future occasions the drug may again be resorted to, to give much-needed rest until, finally, without it, sleep becomes an impossibility and the result a fully established habit. There are so many ways in which this habit may be acquired that it is impossible to enumerate them, but one particular method, being of such common occurrence, especially in the Oriental countries, it may be well to mention—namely the smoking of opium. Opium, as it is smoked by the Chinese, is rolled into a small ball, probably the size of a small pea, and placed in the pipe, the bowl of which is heated over a flame. The effect upon first smoking opium is entirely different from the experience of confirmed opium-smokers: At first there is extreme nausea, followed by a stupor which is associated with hallucinations of a very unpleasant character. Floating apparently before the eye are visions and images hideous to behold. This, in turn, is followed by a gradual quietude and sleep. When this habit is continued these symptoms change. There is with the first inhalation of the opium fumes a feeling of well-being, a sensation of rest, appearances of most pleasant beautiful images and visions, and, in general, a condition which to the weak is an incentive to the further use of the drug.

Opium-eaters, opium-smokers and, in fact, all persons addicted to the use of this drug soon present a very peculiar appearance. The face is sallow, the eyes are brilliant but sunken, the body emaciated, the skin dry and harsh, the mental faculties become dulled, and the person, if before its use honest and upright, soon becomes the reverse. Immorality to the extreme is always observed in opium habitues. The desire to get the drug becomes so strong that he will stop at nothing to obtain it, theft being considered a very legitimate way of procuring the desired article. An opium habitue is a person upon whose veracity you can never rely and, to use the words of one of our best

known American practitioners, "The opium fiend is always a liar."

The treatment of this habit is exceedingly difficult, and it may be said that it is almost impossible to cure the opium habit if the moral support of the patient cannot be obtained. All cures advertised, or attempts by the legitimate practitioner to cure opium habits, fail in every case in which the patient's consent has not been fully obtained. The treatment that some physicians advise—namely, the gradual withdrawal of the drug and giving in its place another stimulant such as strychnine—may prove of some success, but only temporarily, because no sooner does the patient leave your hands than he will gradually turn to his old habit, even if there is not the actual craving for the drug. But, if the patient's support is assured, the treatment is usually simple and success always follows it.

It is of the greatest importance that the patient shall be removed from all baneful influences and placed entirely in care of his physician, preferably in a sanitarium or hospital, or, if this is not feasible, in care of a conscientious and firm nurse. Sudden withdrawal of the drug is contraindicated, it being preferable to simply reduce the daily allowance without the actual knowledge of the patient as to the amount taken. The quantities which an opium habitue can use are astonishing, and it is advisable, even with the moral support of the patient, to still keep him in the belief that these large quantities are administered. Where the patient has become addicted to the use of the hypodermic syringe filled with morphine, hypodermic injections should be continued, decreasing the actual amount of each injection, and substituting for it some stimulant, as, for example, the nitrate of strychnine. Hygiene becomes of great importance; the surroundings should be made as pleasant as possible, and the patient given all opportunities to distract his mind.

In the treatment of acute opium-poisoning promptness is necessary. Evacuation of the stomach by the administration of emetics, such as sulphate of zinc, mustard water, or hypodermic injections of apomorphine, should be furthered. The use of the stomach-pump will prove of benefit. Stimulants, both respiratory and circulatory, must be given, and such drugs as strychnine, aromatic spirits of ammonia, and nitroglycerin may prove successful. Alcohol, while of great benefit, should be used

with utmost caution. Small doses will show no effect; large doses may increase the stupor. The patient must not be permitted to sleep. He should be walked about continually, and slapped or rubbed with towels rung out of ice-water: if necessary, galvanization should be applied, or massage. The physiological antidotes for morphine or opium are atropine and belladonna.

Various colics, such as renal, hepatic or uterine, are relieved by the hypodermic injection of morphine, and the pain associated with angina pectoris is quite frequently diminished by this drug. Morphine or opium added to cough mixtures will have a great tendency to allay irritation usually associated with cough, and its action in diminishing secretions will tend to relieve the cough in the third stage of bronchitis. Delirium, associated with acute infectious fevers, is always quieted by the administration of opium, especially if combined with tartar emetic. Neuralgias of various kinds are quite frequently improved by local applications or hypodermic injections containing this drug; in fact, in all conditions associated with excessive pain, opium or morphine proves of service. In diabetes mellitus, opium proves of the greatest benefit, diminishing the quantity of urine excreted, the amount of sugar, in fact ameliorating all symptoms associated with this disease, and in this disease, as well as in different forms of cancer, opium can be taken in quite large doses. Diarrhoea and dysentery, especially if attended with cramps, are alleviated by the administration of opium internally or in the form of a suppository.

Apomorphine is not an alkaloid of opium, but a derivative of morphine. It is classified as an emetic, and is obtained by adding twenty parts of hydrochloric acid to one part of morphine and exposing it to a high temperature. It occurs in colorless crystals soluble in water and alcohol, but insoluble in other menstrua. As an emetic it can be used in doses of one-tenth to one-sixth of a grain and, if given in small amounts, proves of benefit as an expectorant, especially in the treatment of bronchitis with little or no secretion, in which cases it will quickly overcome this symptom. As an emetic it is most usually administered hypodermically, as it seems to have absolutely no emetic properties if taken by the mouth, and William Murrell found that as high as two

grain doses could be safely taken internally without even exciting nausea.

The moderate use of opium in cases of heart disease is sometimes of the greatest advantage; it will relieve pain and often gives the most important aid in re-establishing the regularity of the cardiac action.

It may be useful if I now say a word about cases in which you should not give opium. Thirty years ago opium was a great deal given in cases of acute insanity. In the violent excitement of acute mania, which is a very terrible thing to see, a physician is often asked by the friends to give some anodyne, if perchance the patient is so situated as to have to remain in a private house for a time. Opium and morphine should seldom be given in such cases. The majority of the superintendents of insane asylums are opposed to the use of opium in insanity unless it be in small doses and for some special purpose. Most of them used it a great deal many years ago, but they have now come to a general agreement that its administration is disadvantageous.

Opium is, I think, as safe as any drug if properly used, and the key-note to success is this: When one is called upon to give opium to a patient for the first time, the initial dose should always be a small one, for afterwards it is easy to give more if the conditions seem to make it desirable. I disapprove of the common use of the hypodermic method of administering opium. By waiting a little longer, just as good effects can be had under ordinary circumstances if the drug is given by the mouth, although of course the dose has to be somewhat larger to get an equal effect. Opium given hypodermically sometimes produces curious and unforeseen disastrous effects. What seem small doses are occasionally sufficient to kill. If the hypodermic method be employed, one half the amount that should be given by the mouth is usually sufficient. Do not misunderstand me and suppose that I mean to belittle the value of the hypodermic administration of opium. Under certain circumstances you can get the desired effect only by giving the drug hypodermically. In eclamptic convulsions, for instance, I often give hypodermically $\frac{1}{4}$ of a grain of morphine with a one-hundred-and-fiftieth of a grain of atropine, every three hours until convulsions cease, and consider it a most valuable remedy for the condition, and I do not think the same effect can be produced under the circumstances by

giving the drugs by the mouth. In dealing with patients in a state of stupor, or if the nervous system has been injured so that it is doubtful if the natural power of absorption of the digestive tract can be depended upon, it is often best to use the hypodermic method of administration if it becomes necessary to give opium.

I would like to call your attention to the report of the Committee on the Narcotic Drug Situation in the United States, at the convention of the A. M. A., which met in New Orleans, April 27-30, 1920. Their principal recommendations were as follows:

"1. That the ambulatory treatment of drug addiction, as far as relates to prescribing and dispensing of narcotic drugs to addicts for self-administration at their convenience, be emphatically condemned.

"2. That heroin be eliminated from medical preparations, and that it should not be administered, prescribed or dispensed; and that the importation, manufacture and sale of heroin should be prohibited in the United States.

"3. In view of the statement in a government report that about 90% of the amount of narcotic drugs entered for consumption are used for other than medical purposes, the Treasury Department is respectfully urged to continue to study and report on the narcotic situation, including the government control of the drugs."

If this statement of the government report is true, and they ought to know what they are talking about, the Harrison Narcotic Law is not stamping out this habit as we all hoped it would. The fault now does not seem to lie with the doctors, who are living up to the law, but apparently seems to be the fault of our importation and export laws. If a doctor prescribes a small dose of narcotic drug to a patient, the same has to be made a record; a jobber in England might ship several thousand pounds of the drug into this country as merchandise and the government knows nothing about the transaction. From 1910 to 1915, there was an average yearly consumption of opium in the United States of 491,043 pounds. This has been greatly increased in recent years and the illegitimate traffic has greatly increased. It behooves the doctor, though, to uphold the law, and to see that he makes no more dope fiends than he can help; do not let any man say you started him taking the drug,

unless you know he has an incurable condition, and then only with consultation should you start him on the drug.

3208 East Broad Street.

NEURASTHENIA.*

By W. C. ASHWORTH, M. D., Greensboro, N. C.
Medical Director, Glenwood Park Sanitarium.

Neurasthenia is a sort of blanket term to cover our ignorance of some functional nervous disorder which we find difficult to diagnose without careful and painstaking examination.

It is well known that the general practitioner has neither the time nor the disposition to make more than a superficial or desultory examination of his nervous patients. It is our usual custom to follow the line of least resistance and dismiss them as quickly as possible for cases that are more interesting, and certainly more easily diagnosed. The average neurasthenic is so pessimistic and self introspective that it is difficult from an ordinary examination to obtain a true conception of his ailment. It is for this reason that often palpable errors are made in the diagnosis of obscure nervous diseases. The utter failure of the patient to visualize or maintain a hopeful expectancy is so deeply seated in his nervous organism that more than mental suggestion is required to help him out of the "slough of despond." Neurasthenia is usually defined as a condition of nerve exhaustion or nervous debility.

The subject of neurasthenia is of so much importance that no attempt can be made to present it adequately before this Society in the short length of time allotted me for the reading of this paper. A brief statement, however, of some general principles involved in mental and neural pathology may help to explain the nature of the group of nervous symptoms known as "Neurasthenia."

In the progress of the medical sciences, the provision in the schools and hospitals for the study and treatment of neurasthenia is only beginning to receive proper attention in this country. The methods taught have been essentially objective, while the subjective, which are vitally important in psychopathological or psychoneurotic cases, have received but comparatively recent and limited recognition. In his clinical work, the student is taught the re-

*Read at the meeting of the North Carolina Medical Society, at Pinchurst, April 26-29, 1921.

finements of the diagnosis of physical diseases. Such objective methods cannot in their very nature be employed in neurotic disorders of a functional character, hence the physician, with all his long years of training in our medical schools, feels helpless in all cases of neurotic disorders, both in theory and practice. He is forced to fall back on drugs and other mechanical treatment without even so much as diagnosing his case.

The symptom-complex is grouped as a rule around a pathological nucleus which controls and guides the morbid manifestations. In a well developed case of neurasthenia, the dizziness, faintness, nausea, acid stomach, etc., the headaches, the anesthesia, hyperesthesia, the fatigue, insomnia, and general depression, bear severally a definite relation to some pathological focus, which the psychopathologist must find by a searching examination before an effective treatment can be undertaken.

The pathological forces, of which I speak, may more properly be expressed as a residual organic habit in the neurone or nerve cells. From this focus there develops the complex. The patient may have days or weeks or months of apparently normal health when there breaks upon the consciousness a feeling of depression, of nervousness, or restlessness, and probably an inner sense of excitement. With these symptoms the patient's appetite is gone, an actual disgust for food may develop, accompanied by constipation or possibly diarrhea. A very important characteristic is the periodicity and remission in the appearance of the symptoms. In order to diagnose these cases correctly, it is necessary for the physician to see the patient as a whole and not alone his physically disturbed functions.

The causes responsible for the disease are about as varied as the premonitory symptoms. In some cases the disease results from some severe infectious disease, which is especially true in tuberculosis, and in other cases we find some general organic condition, such as diabetes, nephritis, constipation and resulting auto-intoxication, and pelvic disease in women, etc. It may follow severe traumatism, overwork, and mental or emotional strain.

We must reckon, however, with another causative factor, deeper lying and more hidden, which allows the exciting cause to become pathogenic. This deeply rooted hidden factor cannot be looked for elsewhere than in a spe-

cial predisposition on the part of the nervous system.

Of the symptomatology of neurasthenia I will mention constant fatigue, disinclination for effort, either physical or mental, loss of will power and the power of concentration, nervous irritability, hyper-activity of reflexes, insomnia, headache, vertigo, tinnitus aurium, heart palpitation, etc. In some cases we observe marked mental depression, alternating with periods of abnormal excitability or exhilaration without apparent cause. Chronic fatigue is the one pathognomonic symptom of neurasthenia. All neurasthenics complain of fatigue and indescribable lassitude, which is present as soon as the patient wakes in the morning and remains throughout the day.

Neurasthenia due to prolonged physical strain has been comparatively rare until within the last few decades, or since life of the average individual has become so strenuous. It requires an exceptional nervous system to escape or pass unscathed when it is necessary for the individual to meet a succession of exigencies, whether of business or social life.

While it is true that strong and normal men sometimes break down under the nerve-racking conditions of modern life, it is only natural to suppose that those of neurasthenic tendencies or antecedents would give way sooner under the pressure of existing conditions. It seems to be the almost universal opinion of medical men that some history of a neurasthenic's constitution or inheritance is to be found in a large per cent. of cases. It is authoritatively stated that only about one-third of the cases of neurasthenics or hysteria develops in the potentially sound individual. It is obvious that a disease would more readily develop in individuals with neuropathic inheritance, and those who are abnormally emotional, or who have previously suffered from a nervous breakdown, or concussion of the brain as a result of injury to the head.

Our recent world war developed many neurasthenics. It may seem rather paradoxical that a large per cent. of the men who developed neurasthenia during our late war were men remarkable for their bravery, daring and initiative, with undaunted courage and valor. It is also worthy of note, and of medical interest, that well seasoned soldiers often manifested the same symptoms of neurasthenia as the young or new recruits. The above fact can

only be explained by taking into consideration that the victim of neurasthenia was temperamentally and neuro-potentially unfit for the strenuous work which they volunteered to perform. It is well-nigh impossible for the physician in civil life to differentiate between who is and who is not a potential neurasthenic. If the medical fraternity had possessed this knowledge at the outbreak of our world-wide conflict, we could have prevented much wastage of the personnel in the fighting lines, the lowering of the morale of the men in active service, and the denuding of the country of men, useless in the field yet capable of valuable work at home. It is not reasonable to suppose that the potential neurasthenic would endure cheerfully the privations and hardships of army life, nor could we expect the neurasthenic to be fired with the spirit required to be a good soldier.

The successful treatment of neurasthenia is about as difficult as the diagnosis. We should make a careful and painstaking examination for any physical or organic condition causing or complicating the neurasthenia and, if such conditions are found, they should be given proper treatment, whether medicinal or surgical. If organic causes of the disease be eliminated, the treatment of neurasthenia should embrace rest and isolation, massage, electricity, hydrotherapy, forced feeding, and the use of appropriate drugs.

The personality of the nurse in charge of neurasthenic cases is of vast importance. A nurse should be selected who is tactful, resourceful, and one who can preserve an equable, cheerful demeanor, and can divert the patient from his gloomy forebodings, and morbid self introspection.

The physician should impress his patient with confidence and, if possible, make him believe that he fully understands his symptoms, and that he is going to get well regardless of any relapses that may develop during the course of his disease. If relapses arise, the physician should be tactful enough to forecast them and be firm in his opinion that the final prognosis is unchanged.

It is absolutely necessary for the patient to be relieved of all business cares and worries, and live a perfectly hygienic life in every respect.

In reference to diet, the food should consist of an abundance of milk, cream, eggs, farina-

ceous food, fruit and vegetables, until the patient is sufficiently strong to leave his room, when the ordinary well balanced diet may be resumed.

It is imperative that the patient refrain from the use of alcoholic stimulants of every description.

The length of time which he should require for rest in bed and isolation is often difficult to decide. It has been my observation, however, that only a complete physiological bankrupt should remain in bed for any protracted length of time. With the majority of cases I have observed that three hours daily, exclusive of the night, is usually sufficient for the average neurasthenic case.

Fundamental re-education of the patient with rehabilitation of his bankrupted nervous system is the essential part of the treatment. It is important to teach the neurasthenic what is meant by neurasthenia, and teach him to contrast his present state of mind with the normal, and to show him that he can attain normality. I cannot emphasize too strongly the importance of re-educational psychotherapy combined with rational physical treatment, based on the particular need of each patient. This part of the treatment, if carefully followed according to a definite schedule, will play an important role in the final outcome of the case. I have further observed that occupation, both manual and intellectual, is important in the re-education regime.

The factor primarily important in the treatment is to regulate, not so much what the patient shall eat or drink, but what he thinks. The whole man must be treated. His whole personality must be closely observed and, when the cause of the nervous disorder has been removed, the physical disturbances will of themselves disappear.

Want of time forbids me even to mention the many and varied forms of stomach and intestinal disorders directly due to nervous and emotional disturbances.

AN APPLIANCE FOR HOLDING INSTRUMENTS GROUPED WHILE OPERATING.*

By J. W. HENSON, M. D., F. A. C. S., Richmond, Va.
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To those operators who are fortunate enough to have a large and excellently trained operat-

*Read before the Southern Surgical Association at its meeting at Hot Springs, Va., December 14-16, 1920.

ing room staff, the device about to be described will not appeal. Such surgeons have only to make signals and have the instrument or whatever they may desire presented to hand at once.

In hospitals where there are a number of surgeons on the staff and the rotation makes the continuous service of each short, or where the individuals composing the operating staff have short terms in the operating room, there is little opportunity for developing a perfectly trained group. Suppose a hysterectomy were being done under such conditions: a table of instruments is in its proper place, a tray of instruments is extended across the patient's legs convenient to the operator's hand and the instruments are correctly grouped. In spite of this apparent preparedness, several times during an operation the surgeon's eyes and hand will be found roving over the instruments, occasionally with the verbal accompaniment, "Where is my tissue forceps?" or "Where is my needle holder?" etc., which means not only loss of time but embarrassment to the operator.

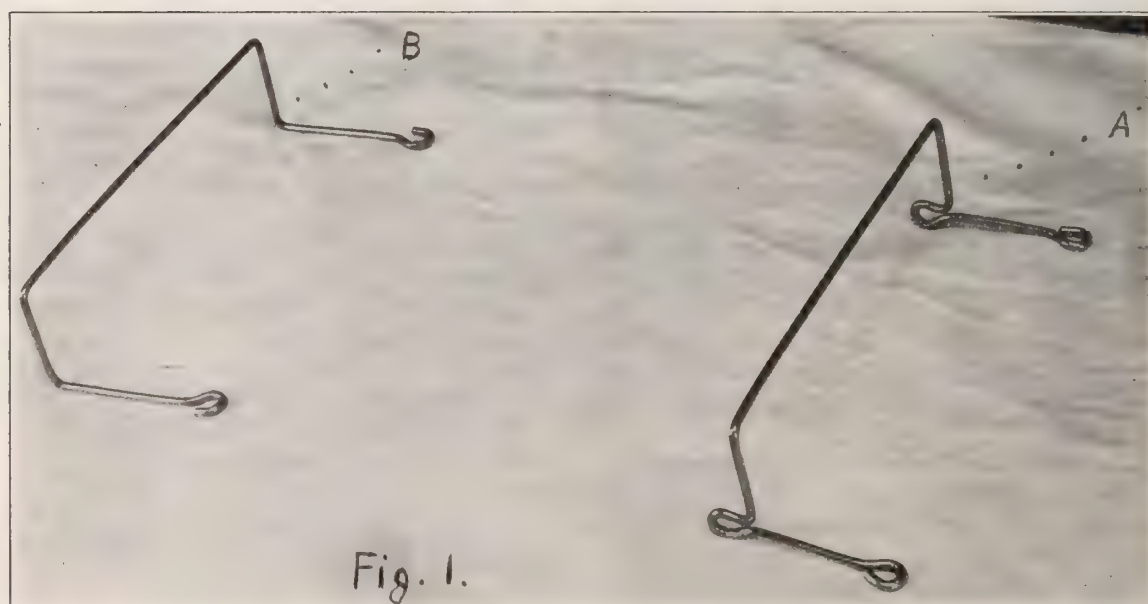
The writer, having had such experiences, became desperate and determined to find some means to prevent the straying of the essential or the frequently needed instruments.

With a piece of soft wire and a pair of pliers with pointed jaws, a model was worked out and turned over to a mechanic. The device is

made of iron or steel wire and nickel plated. It is made in sections and so constructed that when two sections fastened together are placed on a plane surface with a wet gauze towel over them, there will be two parallel elevations each about $6\frac{3}{4}$ inches in length, with a depression between them $3\frac{1}{4}$ inches wide and $1\frac{3}{4}$ inches deep, which will serve as a nest or pocket for a group of instruments. If several sections are united, there will be formed a rack which will provide several pockets for groups of instruments.

The sections are made in two types (see A and B, Fig. 1). For the purpose of description, suppose they are resting on a horizontal surface. The two types have the following features in common: a $6\frac{3}{4}$ inch horizontal bar continuous at each end with a vertical $1\frac{3}{4}$ inch stem, which is in turn continuous at a right angle with a $2\frac{3}{4}$ inch foot piece, the latter ending in a loop flattened from above downward. The two foot pieces are parallel and a vertical plane through each would make a right angle with the horizontal bar.

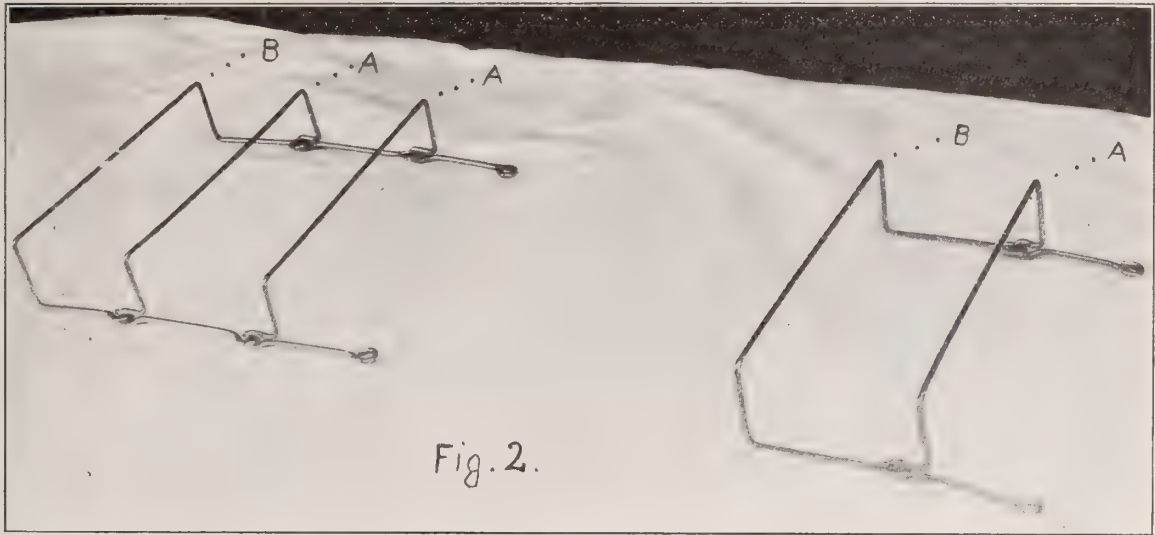
The difference between the two types of sections is that in type A each vertical stem at its lower end makes a backward loop before finally continuing into the foot piece. These loops are flattened from side to side and are for union with the loops on the ends of the foot pieces of another section. Section B



being a terminal one has no loop on its vertical stems.

The writer uses two racks, one made of two

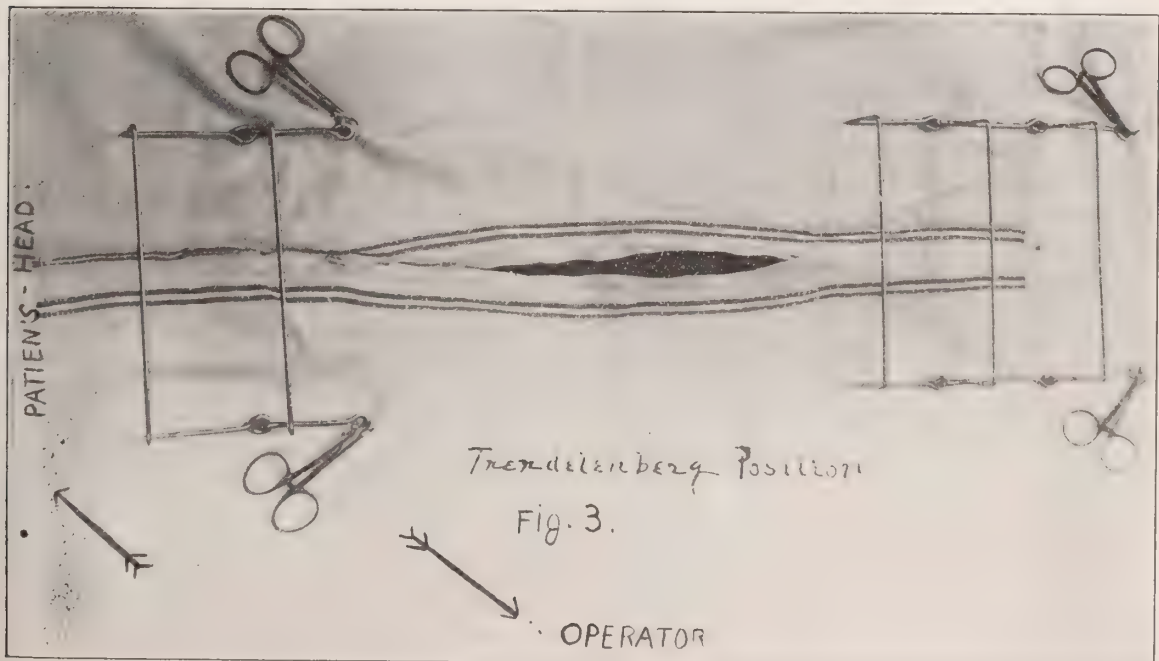
clamps through the loops (Fig 3). The reasons for this particular relation between the racks and the patient's body are that in the



sections and the other of three sections. The three section rack is placed to the right of the operator. The two section rack is placed to the right of the assistant. In operations through a median or near median abdominal incision, the racks are placed with the free foot pieces toward the patient's feet and these are attached to the operating sheet by towel

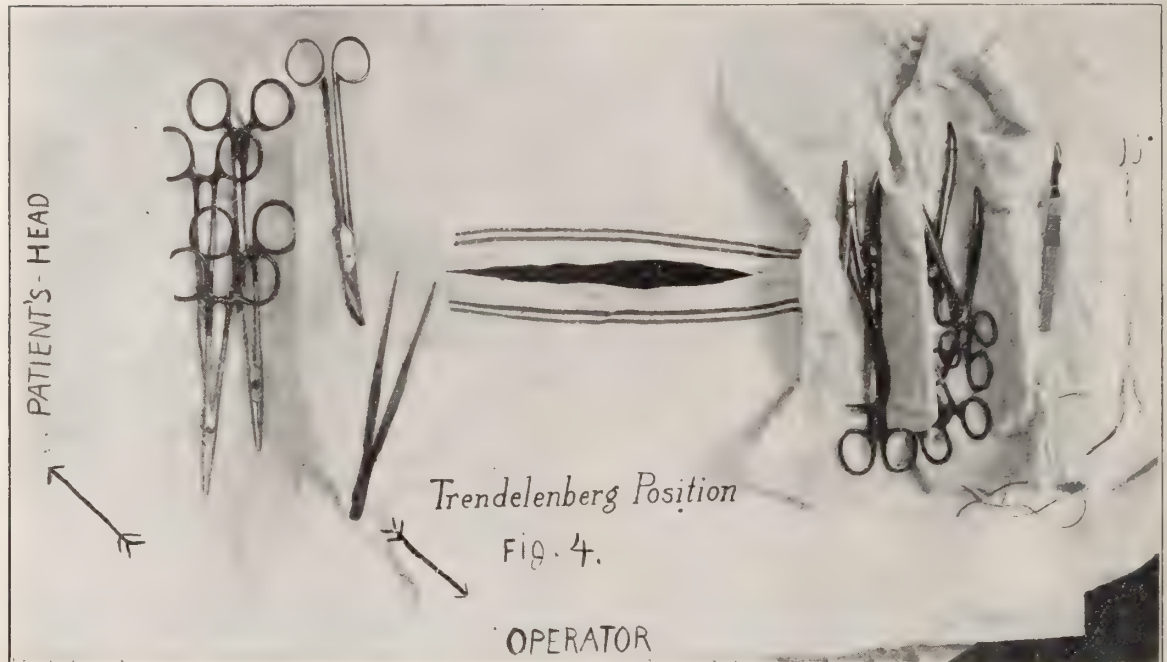
Trendelenburg position the weight of the instruments might cause the racks to fold up, if the attached ends were toward the patient's head and, furthermore, in this position, the free or terminal foot pieces of each rack with the corresponding bar make an additional pocket, as can be seen in Figs. 3 and 4.

The racks are intended to provide for the



instruments that are most frequently in demand during an operation. The others are placed on the usual tray and with the tray in its usual position. The writer places scissors and needle holder in the first pocket to his

To these two ideas the writer is wedded. As far as this particular appliance is concerned, it serves the purpose for which it was devised but it can easily be altered by any surgeon to conform to his views and probably some clever



right; in the next, hemostats and clamps; and in the third, knives, strands of catgut for ties and needles threaded with the requisite sutures.

On the right of the assistant are placed scissors and tissue forceps in the first pocket and, in the second, hemostats and clamps. Note that the tissue forceps, though in the assistant's rack, is placed with the handle toward the operator for his use and convenient to his left hand.

On account of the sections being joined by hinge method, the racks will fold up and can be conveniently packed in a bag with instruments.

The size and shape of the sections composing the racks and the instruments that comprise the groups in the several pockets are minor considerations. The important ideas are to have fixed places for groups of instruments and to have the groups arranged conveniently, so that the hand of the operator will fall automatically upon the instrument needed.

surgeon will work out something the writer may adopt with pleasure.

103 Professional Building.

GET THE HABIT—THE ESSENTIAL FACTOR IN THE FIGHT AGAINST TUBERCULOSIS.

By STEPHEN HARNSBERGER, M. D., Warrenton, Va.

Non est vivere, sed valere vita.

FOREWORD FROM MISSOURI. What I shall say is briefed to an incomplete summary of what can be said. My purpose is to evoke greater interest of physicians in the fight against the worst of all plagues—tuberculosis. Permit me to quote from Missouri: "Tuberculosis is the most common serious disease, one of the most contagious of all diseases, one of the most fatal diseases if neglected, one of the most curable if detected early and handled with interest and enthusiasm, and one of the most interesting if one once becomes interested in it."

CO-OPERATE EFFORT ACCOMPLISHES. Many physicians are too busy, some are too impatient, others are too lazy, and all of us are too careless, to give thought and time outside of our customary routine. But our duty to our clientele does not end our service. We must look beyond; not just correct the fault which holds us a patient, but see what we have not seen and strive to abate influences and conditions which may act as potential predisposing and inciting causes of disease. Though physicians work individually, this is no reason why they should not co-operate collectively and actively, if not enthusiastically. Organized effort invariably accomplishes.

How may we best operate against tuberculosis? With your indulgence, I will suggest what I consider a feasible method of procedure:

KNOWLEDGE LIBERATES TO ACTION. Get the habit of keeping in mind that knowledge awakens conceptions which evolve and exalt human energies. The people do not know. Conventional ignorance blinds them to even the elemental demands of life. The people must be made to see and think before they give manifest heed to changes best for individual and community. The solution is in the dissemination of plain health facts through educational enlightenment.

NEWSPAPERS DOMINANT FACTOR. Get the habit of emphasizing the value of the press, which is ever active in giving time and space to all matters calculated to help the people. Newspapers strive to keep readers abreast of the current of daily news, business progress and public health reforms. They are among the people's best friends. Advise families to take, pay for, and read, at least one live newspaper.

RAILROADS STIMULATE THRIFT AND ASPIRATION. Get the habit of admonishing people not to hold ill-feeling toward railroads. No community without a railroad can develop into anything like a highly prosperous and enlightened section. *It is noteworthy that prosperity and knowledge are virile antagonists of tuberculosis.* Therefore, have the people keep in friendly touch with railroads. What is best for one is best for the other. Repressive agitation and legislation has crippled railroad expansion.

GOOD ROADS ANIMATE PROGRESS. Get the habit of reminding women, especially in rural

sections, that bad roads spell oppression—good roads liberty for women and children. Fix in mind that bad environment and ignorance are the chief factors that give life and sweep to the agents and agencies which create and spread tuberculosis. Good roads swell business opportunity, enforce equity of wage-scale, make for more comfortable homes, promote social intercourse, minimize illiteracy, elevate moral tone, improve environment, cut down disease and contribute increased happiness. *Railroads and good roads must have recognition as valuable units in the campaign against tuberculosis.*

"UNREASONABLE HABITS" MARK OF WEAKNESS. Reforms go slow and this snail pace is due, in most part, to the unthinking, unthrifty, improvident classes of men who smoke and chew and drink; who spend on useless and evil habits what should go to their families; who force their families to a life of poverty and ignorance; and diverted from such waste to road building, the country would soon become a network of good roads. With good highways we would not have poverty and tuberculosis at every cross-road, and illiteracy would be rated as a blunder of the past.

KNOWLEDGE PLUS SKILL ESSENTIAL. Get the habit of telling the people that the conquest of tuberculosis depends to a large extent on better care of the mother before and during pregnancy and of both mother and child during and after birth. A healthy mother, other things being equal, will bring forth a healthy child. In atypical cases, however, the safety of both mother and child rests altogether upon the knowledge, experience, skill and care of the person in charge. Therefore, it is always best for parturient women to be attended by properly qualified physicians. Midwives should never be employed. Many surgeons openly charge that they are kept busy by the careless and ignorant attention given women at childbirth. For this reason, if for no other, obstetrics and pediatrics should be made to take first rank in medical schools (not the tail-end as heretofore), and graduates should be required to have at least two years' practical bedside experience in these two branches before they are eligible to practice.

INTELLIGENT TRIAL DEMANDED. Get the habit of teaching people that health measures can only do good to the degree and time they give them definite use. "Habit," Webster ex-

plains, "is an internal principle which leads us to do easily, naturally, and with growing certainty what we do often." Hence, pre-eminently, habit of doing becomes a conviction and, being a conviction, goads to exertion. Misfortune is not a crime, nor is imprudence the greatest guilt; *but the people should know that physical, mental, moral and spiritual deterioration follows their own lack of forethought.* Keep this reminder before them.

RESEARCH PROPHYLACTIC. Get the habit of looking for tuberculosis and the conditions which lead up to the disease. This constant alertness will better edge diagnostic acumen and will lead repeatedly to a correct diagnosis, even without the confirmatory evidence of plain objective symptoms and signs. The judgment trained by close observation learns to correctly interpret the collective clinical findings and a correct diagnosis is frequently made in advance of the disease itself. Or, to put it clearer: Use "common sense vivified and heated by conscience"—the complementary essential in the hunt for tuberculosis. In no other disease is this so true as in tuberculosis. *The early diagnosis, which statistics show is now seldom made, is the peremptory prerequisite step in its cure, control and prevention.* Of all defaults of duty, the late diagnosis defines the greatest wrong.

VALUE AND ECONOMY OF INTERVENING MEASURES. Get the habit of instructing the masses, and particularly legislators, that the prevention and cure of tuberculosis involves sociologic and economic problems, to meet which, existing State laws must be so worded as to give health departments power, through discretionary authority and adequate financial aid, to take supervisory charge over all suspects, environments and cases which may make the activity and spread of the disease a menace to others. While it cannot be too strongly emphasized that laws designed to control and restrict tuberculosis are primarily public health measures, and that the economic problems that may be involved should be considered as being of but secondary importance, it remains an indisputable fact, a fact not hitherto given prominent thought, that spending money to safeguard the people against tuberculosis is an actual saving of money. For the measures instituted to curb tuberculosis—legal and equitable care—the improvement of environment by hygienic and sanitary measures at one and the same time effectually works to prevent all

other preventable diseases. They are economic measures because comprehensive in application and results. This ultimate truth bars rational contradiction. Legislators, I take pleasure in saying, are awakening to a greater degree of appreciation of the fact that adequate provision must be made to protect the well from tuberculosis and to reinstate its victims to a life of usefulness.

POLICE CONTROL REQUISITE. Get the habit of keeping before the minds of the people that modern medical thought turned the pest-ridden jungle of Panama into a model habitable area. It seems axiomatic that what has been done there can be done elsewhere. It gives the hope and furnishes the basis of the belief that cleanliness and sanitation is all that is necessary to wipe preventable diseases from the face of the earth. But this is by no means true. We are told that adequate living wages and sanitary measures did it there and will do it anywhere. This also is not true. Neither the one nor the other nor both together did it. What, then, you ask, did do it? The well applied coercive police supervision did it—the penalty of loss of work and wages. That and that alone did it there, and without this magic stabilizing force it cannot be done elsewhere—to the same degree of perfectness and permanence. Keep this before the people in general, and legislators in particular. It will show them that counties, municipalities and States must have health boards holding positive governing powers, and that those health boards must have full-time health officers and visiting agents to inspect, direct and enforce the things that are best for the people's and States' welfare. With this obvious truth engraved on their minds, they will know that it is for them to open the door that bars the way to safety.

HITTING THE MARK. LAST WORD FROM THE HEART. Get the habit of realizing that we have been shooting too much at random. It is time we were nearing the mark. Experience, reason, safety, expediency, mutually combine to urge this evident course: *Spy out the incipient case—isolate it—cure it—the only way to stop it.*

"Oft, when in my heart was heard thy timely mandate, I deferred the task."—Wadsworth.

Defer no longer—let affirmative action seal that inward conviction of duty. Now—today—the "timely mandate" warns—for tomorrow awakes tuberculosis—opportunity gone—death.

MECKEL'S DIVERTICULUM: REPORT OF SIX CASES.*

By CARRINGTON WILLIAMS, B. A., M. D., Richmond, Va.

The following cases having a Meckel's diverticulum have been observed:

CASE 1. C. H., male, age 28, was admitted to St. Luke's Hospital, New York City, on April 20, 1915, complaining of right inguinal hernia. His history was entirely negative except for the presence of the hernia of six years' duration. Physical examination was negative except for the right inguinal hernia of the indirect variety extending into the scrotum. The sac was readily separated and its contents found to be irreducible; it was therefore opened. Small intestine was adherent to the bottom of the sac, the bowel was delivered by separating these adhesions and found to be the blind end of a diverticulum, traction on which brought down a loop of ileum. This diverticulum arose from the gut on the side opposite the mesentery; it measured four inches in length and its diameter was that of the small intestine. The diverticulum was amputated and the hernia repaired. The patient's recovery was uneventful.

CASE 2. M. S., age 29, male, was admitted to St. Luke's Hospital, New York City, on May 5, 1915, complaining of chronic indigestion. This patient was an Italian and his history difficult to obtain. For four years he had had colicky pain in the region of his umbilicus, anorexia, flatulence and constipation. He had not had an attack suggestive of acute abdominal disease. His appendix had been removed through a McBurney incision six months before admission but he was not improved by the operation. The abdomen was opened by Dr. Mathews through a high right rectus incision. There were no adhesions and all the viscera were normal except a diverticulum arising from the ileum located 18 inches from the ileocecal valve. The diverticulum was about the size of the last joint of the thumb measuring one inch by one-half inch. This was removed. The patient made an uneventful recovery, was relieved of his symptoms, and gained weight during his convalescence in the hospital.

CASE 3. W. C. S., male, age 9, was admitted to St. Luke's Hospital, Richmond, Va., February 13, 1917, complaining of severe abdominal pain. He had had frequent attacks of mild

abdominal pain attributed to food. The present attack began four days before admission with severe colicky pain over the entire abdomen, nausea, vomiting and constipation. His physician gave him several enemas resulting finally in a good bowel movement. Enemas given during the past two days, however, have been without result. His severe pain became localized in the left lower abdomen but there was some pain in the epigastrium. The abdomen was distended and rigid, the right rectus muscle was particularly rigid. Leucocyte count was 21,500, polymorphonuclears 73%, lymphocytes 27%. The abdomen was opened by Dr. McGuire through a right rectus incision. A diverticulum was found about four inches long, gangrenous at its tip. It arose from the small intestine and was adherent to the mesentery forming a complete obstruction to the bowel. The diverticulum was removed and the obstruction thereby relieved. The patient was in such poor condition that the abdomen was closed without further exploration. He made a good recovery.

CASE 4. M. Z., female, age 43, was admitted to St. Luke's Hospital, Richmond, Va., January 11, 1920, complaining of indigestion and abdominal pain. She had an attack five years before in which she had cramp-like abdominal pain, fever, nausea and vomiting lasting five days and diagnosed appendicitis. She has had recurrences of similar but milder attacks which have become more frequent during the past few months. During the period in which she has had these attacks she has had no appetite and has suffered with flatulence. Her bowels have always moved regularly. She has not lost weight. The abdomen was opened by Dr. McGuire in the mid line and an adherent appendix removed. A diverticulum was found coming off the lower ileum and showed evidence of having been inflamed. It was removed. The patient made an uneventful recovery and, when seen six months later, her symptoms had been relieved.

CASE 5. T. W., female, age 42, was admitted to St. Luke's Hospital, Richmond, Va., April 29, 1920, complaining of irritation of the bladder. This patient had a chronic pelvic infection and in the course of the operation a small diverticulum was discovered arising from the lower ileum and removed. There were no symptoms which could be referred to it.

CASE 6. W. R., male, age 9, was admitted to St. Luke's Hospital, Richmond, Va., on Jan-

*Read before the Tri-State Medical Association of the Carolinas and Virginia, at Spartanburg S. C., February 16, 1921.

uary 23, 1921, complaining of abdominal cramps and locked bowel. He was a healthy strong boy who had never had any serious illness. His mother recalled frequent attacks of abdominal cramps of short duration attributed to over-eating. Three days before admission he had a sharp cramp extending over the entire abdomen. The next day the pain was more severe and he vomited several times. Numerous cathartics and enemas failed to move his bowels. When he arrived at the hospital he was seriously ill. The abdomen was slightly distended, very rigid over the lower half, and a rounded mass was felt in the left lower quadrant. This mass could also be felt above the brim of the pelvis by rectal examination. An enema was given with no result. The abdomen was opened by Dr. McGuire in the mid line and a diverticulum was found twisted on itself and involving in the twist a loop of ileum, all of which was gangrenous. The loop of bowel containing the diverticulum was resected and an end-to-end anastomosis done. The diverticulum was distended, measuring six inches in length and two inches in its greatest diameter. The patient died 24 hours later.

The standard text books on anatomy and the papers written on this subject give the incidence of Meckel's diverticulum as 2% of all individuals. Balfour¹ reported that it was discovered only 15 times in 10,600 abdominal operations at the Mayo Clinic or 0.14 per cent. That it is seen in so much smaller numbers on the operating table is easily explained, for few operators examine the small intestine and, unless the diverticulum is diseased, it is not casually discovered.

The diverticulum is the remains of the vitelline duct of the embryo and in post natal life is located on the terminal four feet of the ileum usually about 18 inches from the ileocecal valve. The wall of the diverticulum is the wall of the lower ileum and the mucosa and submucosa contain the usual glands and lymphoid tissue of this gut. Wellington² collected 326 cases reported up to 1913 and found that one-third are attached to the navel either as an open fistula or by a fibrous band. The length varies from $\frac{1}{2}$ to 9 inches. Its blood supply is received through an extension of the mesentery along its border. In Wellington's collection of cases the following conditions in order of frequency were found: Intestinal obstruction, intussusception, acute diverticulitis,

in hernial sacs, opening at the umbilicus, volvulus, perforation in typhoid, perforation from foreign bodies, and tumors. The inflammatory cases formed only 15 per cent of this number. This is due to its large caliber providing easy drainage of its contents and, being attached to mobile gut, it is less liable to stoppage and its resulting infection than its neighbor the appendix.

Fauntleroy³ reported the case of a young seaman who was seized with sudden severe abdominal pain simulating acute appendicitis. Operation was done in less than 24 hours and an intussusception found with a Meckel's diverticulum at its head.

Pearce⁴ reported a case of acute diverticulitis gangrenous and perforated when the operation was performed, 12 hours after the onset of symptoms.

Bennett⁵ reported the case of a young girl with intestinal obstruction due to a Meckel's diverticulum adherent to the omentum, thus forming an arch through which four feet of ileum had twisted.

Harbin⁶ reported two children having diverticula opening at the umbilicus. He also reported a woman in whom a diverticulum was discovered in the course of a pelvic operation. She had had vague digestive symptoms for years.

Frasier⁷ reported a young man who had frequent mild colicky pains. At operation the appendix was normal but search revealed an inflamed and adherent Meckel's diverticulum.

Borden⁸ reported a remarkable case in which the diverticulum had tied a knot around a loop of bowel and the whole mass was gangrenous.

These cases are quoted to illustrate the pathological possibilities. It is easy to imagine the obstructive potentialities of a finger of gut which may be adherent to the umbilicus, omentum or mesentery, or free to twist and tie itself around the neighboring loops of gut. Halstead⁹ says that this diverticulum is responsible for 6 per cent of all intestinal obstruction.

The symptoms arising from such varied pathology are not constant enough to permit of accurate diagnosis. In the past histories of our Cases 2, 3, 4, and 6, frequent attacks of colicky pain were noted and in Case 2 the pain persisted after removal of the appendix. In general, the inflammatory cases simulate appendicitis. Case 3 was thought to have peritonitis on account of the distention, tenderness

and rigidity on the left side. The obstructed cases give the picture of a low obstruction where the distention is only moderate and the vomiting not profuse but, although the symptoms are not so alarming as a higher obstruction, the danger of gangrene of the gut is just as great. Wellington's² collection of 326 cases showed a mortality of 57 per cent of all cases.

That it can be a source of irritation to the stomach in the so-called surgical indigestion, the author is convinced. Harbin's⁶ case and Cases 2 and 4 above are illustrations.

A positive diagnosis of the condition cannot be made until the abdomen is opened except in the rare cases where the diverticulum is open at the umbilicus. At operation, if the pathology is acute, it is easily discovered, but in any case a short search along the terminal four feet of ileum would find or exclude it. If found, even though it be not diseased, it should be taken out in the same manner that the appendix is routinely removed when the abdomen is opened.

COMMENT: The cases herewith reported may be summarized as follows: Cases 1 and 5 presented no symptoms referable to the diverticulum, which was removed in the course of operation for other trouble. Cases 2 and 4 had recurring attacks of pain which can be attributed to disease of the diverticulum and in addition digestive symptoms which were relieved by removal of the diverticulum. Cases 3 and 6 were acutely ill with obstruction of the bowel; both had had numerous previous attacks of abdominal cramps which can be explained by the presence of the diverticulum.

This series of cases illustrates several interesting conditions which may result from the diverticulum. The two cases which had acute disease were seriously ill and the above mentioned mortality of 57 per cent of all cases is most impressive. I am particularly interested in the two cases which were relieved of chronic indigestion by removal of the diverticulum and believe that every exploratory laparotomy should include an examination of the lower ileum for the diverticulum, particularly when other findings are not conclusive.

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MUNICIPAL CONTROL OF TUBERCULOSIS.*

By C. L. HARRELL, M. D., Norfolk, Va.

In presenting this subject, it is not my intention to try to mention anything new, but to call attention to a few facts as they exist in our city and State, in an attempt to stimulate more interest among the profession in the fight to prevent the spread and development of tuberculosis. For the sake of convenience, I will classify the tuberculous into three groups: First, the early and moderately advanced cases above 10 years of age; in group two, the far advanced cases; in group three, all children under 10 years of age. It is with the latter group that the bulk of this paper will deal.

The early and moderately advanced cases that develop in the State are being taken care of fairly well at our three State Sanatoria. Catawba Sanatorium has a capacity of 300 beds; Blue Ridge Sanatorium, at Charlottesville, has a capacity of 100 beds; Piedmont Sanatorium, for colored patients, at Burkeville, has a capacity of about 100 beds. Patients are allowed to remain in these institutions from three to twelve months, according to the case, the average being about six months. When they are dismissed from the sanatorium, if the disease is not arrested, a majority of them are well on the road to recovery and know how to take care of themselves, and how to prevent infecting others. A small percentage develop into far advanced cases and have to continue treatment elsewhere. They are really institutions of learning. I consider them to be a great asset to our State, and to the future generations. Unfortunately, there are not more State Sanatoria. About 1,000 cases at the most get instructions and treatment at these institutions during a year. According to various estimates, there are from 23,000 to 40,000 cases of tuberculosis in the State, so you see what a vast number are going untreated. One great trouble with the situation is that we have been

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grasping it in the middle and letting both ends go loose, by underestimating the danger of the far advanced cases, and letting the young children get by with very little attention.

Group two, the far advanced cases, the most dangerous of all, I regret to say, have no place to go for care and treatment. A majority of them are left to shift for themselves, they stand an outcast and a menace to society. No one wants to treat them, no one wants to care for them, not even their own people want them around. How many there are of these poor unfortunate individuals, it will be hard to estimate. The Bureau of Vital Statistics report 3,445 deaths from all forms of tuberculosis for 1919. Our City Health Department reported 154 deaths from tuberculosis in 1920. This I consider a very good report for a city of its size. However, this does not include the ones that died at the City Home, or the ones who died away from here and were brought back to be buried, but it means that there were 154 homes in our city last year that were hotbeds of infection, 154 individuals walking the streets, so long as they were able to walk, scattering infection on every hand. What are we to do with these cases? There is room at the City Home to take care of about 40 patients; with but a few exceptions they will not go there. It is against the rules for any other hospital to admit them. To say that a far advanced case of pulmonary tuberculosis left to do as he or she wills is a menace and dangerous to society is putting it very mild, especially when we know how susceptible children are to tuberculous infection. One author states that in a primitive race tuberculosis is just as contagious as measles. By primitive race he meant a people who had never had tuberculosis to establish an immunity. It has been proven by many that from 70 to 90 per cent. of all children will give a positive tuberculin test by the time they reach 18 years of age. We also know it is very fatal to children under 3 years of age. Dobbie states that a majority of all children under 3 years of age infected with tuberculosis die. Hempleman, in a study of 130 infants under 2 years of age with pulmonary tuberculosis, gives a mortality of 78 7/10 per cent. for the first year, 57 4/10 per cent. for the second year, or 68 per cent. under 2 years of age. Walstein and Spence, in analyzing 362 deaths in children from all forms of tuberculosis, found that 73 per cent. died

under 2 years of age, and 86 per cent. under 3 years of age. Of this number 193, or 53 per cent., died of tuberculous meningitis. It is recognized that tuberculous meningitis is the most fatal form in infants. It is an established fact that all children are very susceptible to tuberculous infection, but more so under 3 years of age. Elliott says that a tuberculous mother should not care for or nurse her child. Dobbie says that a tuberculous mother must not be allowed to come in contact with her child for three years. He also states that if a father is tuberculous, he should not live in the house so long as there is in the house an infant under 3 years of age. I will go one further and say no person should be allowed to marry within three years of the time they had had active clinical tuberculosis—certainly no children should be permitted to be born within that time. It is almost impossible to say when one's lips and sputum are free of infection.

In view of the above statements, what are we to do with the chronic, far advanced cases? The State cannot and should not be held responsible for them. It is too big an undertaking. The cost would be tremendous. Facilities for treatment should be provided for them near at home. Each thickly populated community or municipality should have a well equipped tuberculous hospital where all far advanced cases, rich and poor, can be properly isolated and taken care of during their lingering illness. We are far behind the Northern and Western cities in this respect. Norfolk boasts of its fine churches and public schools. I would also like to hear it boast of an up-to-date tuberculous hospital. As a suggestion, I believe it would be feasible to move the cottages from the City Home to the site now owned by the city, adjoining the contagious hospital; this would serve as a nucleus for further expansion. It would certainly relieve the present situation until better facilities could be provided.

Under group three, I have included all physically sub-normal children under 10 years of age. This group may be further subdivided into, first, those having active clinical tuberculosis; second, children of tuberculous parents; and those that are anemic, undernourished and underweight. By the ones having active clinical tuberculosis I refer to those with cough, expectoration, temperature, pulse and chest signs. These children should have special

care. There is no place in the State where these cases can get treatment except at home. As every one knows, the majority of children that develop tuberculosis are from the poor families, where the food and accommodations for treatment are poor, and, to say the least, very unsatisfactory. I might add that Dr. Grandy has a place at Cape Henry (a preventorium he calls it) where he handles about 15 cases three months during the summer. He does not take any active open cases.

In my opinion, the State should provide for these children. There should be a pavilion at each State Sanatoria for children of school age, under the supervision of competent nurses and teachers. There is no reason why a child taking the cure should not be given a few hours of schooling each day; it helps to keep them satisfied and contented, and the improvement of mind and body may go hand in hand. Connecticut, Massachusetts and Maryland, to my knowledge, have such an arrangement.

It was my good fortune last summer to visit the Gaylord Farm Sanatorium, near New Haven, Connecticut. The physician-in-charge is Dr. David R. Lyman, formerly of this State. This is a semi-State and private institution. He has a ward there with 25-bed capacity, in which he admits children from 6 to 13 years of age—no open cases. They were a happy, hearty-looking bunch. Some one asked how he knew these children had tuberculosis, as no one was admitted with a positive sputum. His reply was, "I do not know, and do not care. One thing I do know; some of these children came from homes where there was tuberculosis; all of them were anemic, undernourished, underweight and subject to colds. This is the class from which tuberculosis comes. Why wait until they develop the disease to treat them? Treat them now and prevent development."

What is being done in our city and State to help this class—the physically sub-normal child? A great majority of them are in school impairing their health, stinting their bodies in an effort to improve their minds, and as a result both are being sacrificed.

Last September I wrote to the superintendents of the public schools of each city in the State and asked the following questions: What was your enrollment last year? Did you have an open air room? What was the cost of maintaining this room above the average? I was

merely trying to get a vague idea of what was being done throughout the State for the physically sub-normal child. As a result I found that there were only four cities in the entire State doing anything at all to help these children, and that very little. Lynchburg had one open air room which accommodated 20 children; Petersburg, one room accommodating 20 children; Danville, two open air rooms last year with 38 enrolled; Richmond had 15 open air rooms last year, eleven for white and four for colored. Since this session began, one nutrition clinic has been started in Norfolk at the request of a principal.

A great many more children of school age are in need of treatment and special care than one would think. Emerson, of Boston, who has done a great deal of work along the line of open air classes and nutrition clinics, states that extensive studies have shown conclusively that at least one-third of the children in this country of school age and pre-school age are sufficiently underweight for their height as to require treatment for malnutrition. He also says that children 7 per cent. or more underweight should be grouped in open air classes, school pressure removed, and the class method used in treatment as a part of the school program. He estimates that about 18 per cent. of our school children are 7 per cent. or more underweight.

There are several organizations at the present time trying to get a hold into the public school system, with the object the betterment of the physically sub-normal child. First, I will mention medical inspection. The limit of its scope at present is to recommend the removal or treatment of diseased tonsils, adenoids and teeth, and the exclusion of contagious diseases. Another organization is the Modern Health Crusaders, having as their object cleanliness, regulation of habits as to meals and sleeping hours, and wholesome food. Another band of workers are trying to start open air classes with lunches. The prime object of this group of workers was to take care of the children with suspected tuberculosis and the feeble-minded. It has broadened its scope, and now takes in all undernourished and physically sub-normal children. Then there are others who are advocating free lunches at school for the anemic and undernourished child. I might add that these anemic, undernourished chil-

dren are not always from the poor families, but often from the well-to-do.

All of these workers are doing a great deal of good, but I claim that all of them should be grouped under one great head and that should be medical inspection. Let the physician be the instigator and director, and not the Mothers' Home League, Modern Health Crusaders, or some similar organization. A room should be fitted up in each grammar school as an open air room, with a special trained teacher in charge, where all the physically sub-normal children could be classified. Those that need it should be served with 1,500 to 2,000 calories of food each school day. Have a physician in charge of this work who is interested and capable of doing it. By this means I believe that many of our children now out of school on account of bad health would be in school, and those that are backward in their work on account of a lack of proper nourishment and classification will be promoted on time.

I am sorry, but we are far behind other cities in this work; the Northern and Western cities have been carrying it on for years. What has proven to their advantage I have no doubt would prove to be ours also if given a fair trial.

As a means of prevention I am heartily in favor of a careful physical examination of each teacher, certainly once, if not twice, a year. One with active tuberculosis should not be allowed to stay in a closed room all day mingling with small children, leaning over them, and in many instances loving and kissing them, as teachers too often do. I will make one exception, but only one, a teacher who has been to a sanatorium and taken the cure. She knows how to protect herself from others, and is not ashamed to do so.

There is a requirement of our city school board at present that each teacher present a certificate of good health at the opening of school in September. I happen to know that this rule is not being properly observed. The medical inspectors should not be allowed to give these certificates at school where they have no facilities of making a careful examination. Not even the Department of Health has a right to issue a certificate of good health to a person who is to qualify for a year's work without a careful physical examination. You cannot look at a person and say that he or she has or has

not active tuberculosis. If you apply for a position with a large insurance company, or United States Government, you are required to stand a very rigid examination. Our public school system is just as important, and we should be just as careful.

In conclusion, I wish to emphasize the importance and the great need of a tuberculous hospital in our city, for the isolation and treatment of far advanced cases of tuberculosis. It would be a fitting memorial to anyone who is interested in humanity to erect such an institution to his memory.

Second. The need at each of our State Sanatoria of a pavilion for children of school age for the treatment of active open cases.

Third. The importance of the open air classes and nutrition clinics being introduced into our public schools, for the development and treatment of anemic, undernourished and otherwise physically sub-normal children. I am in favor of this being a branch of medical inspection.

Fourth. A more careful examination of the teachers of the entire system.

My sole interest in the entire tuberculosis problem is to catch it early, stop it where it is, prevent infection, and to prevent development in case of infection.

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311 *Taylor Building*.

THE STATUS OF THE GENERAL PRACTITIONER: AS IT IS AND AS IT SHOULD BE.*

By J. A. OWEN, M. D., Turbeville, Va.

There was a time within the memory of most of us when the general practitioner, and by that I mean the family physician, occupied a position in the community that was well nigh ideal. He reigned supreme in things medical, his authority was unquestioned, he enjoyed the

*President's address before the meeting of the South Piedmont Medical Society in Lynchburg, Va., April 19, 1921.

confidence and respect of the whole community, he gave of his best efforts to his work for the good of his people, and they in turn rendered unswerving loyalty and support. These were the halcyon days of practice.

That a change has come about gradually, but nevertheless surely, from this happy state of society, no one of you will deny, and I think you will also agree with me that general practice, while more lucrative and less exhausting physically, is more exacting, more trying mentally and less satisfactory than it has been at any time within your memory. From this exalted position of being looked up to and in many cases almost revered by his people, the general practitioner has descended in the popular mind almost to the plane of a tradesman: people change doctors almost as readily as they do grocers and butchers and often upon just as slight provocation, and it is nothing unusual, in the cities, at any rate, for as many as three doctors to be physicians to the members of one family.

Now, what are the causes of this decline in the standing of this honored and noble profession? Dr. Frank Billings, writing on this subject recently, ascribes the following as the causes: First, the doctor himself, who in the rush and grind of every day practice cannot keep abreast of the advances in medical progress and the use of special instruments and refined technique, and, perforce, must drop out or do superficial work. Second, the masterful strides of surgery within the past two decades offer prompt and often spectacular cures which medicine cannot promise. Third, the medical schools, by emphasizing the specialties of the faculty, most of whom practice some particular branch, get the student's mind focussed on some one phase of medicine leading him away from general practice.

To my mind there are other causes, too, one of them is contract practice, whereby medicine is put on a rental basis like fuel and lights, and so is commercialized.

Then there is that most vicious factor fostered by newspaper advertising of patent medicines, where the symptoms of every ill are published and the victim becomes the self diagnostician and prescriber.

To this list one might also add the various cults of drugless healers who promise so much and often do nothing, while the honest physician must of necessity be most conservative

in his prognosis in the very cases which these nostrum vendors and fakirs guarantee to restore to health.

In reply to a question as to the remedy for this almost deplorable condition, Dr. William J. Mayo writes the first step in readjustment is, "surgery should be put back where it belongs, a means of mechanical therapy in conjunction with medicine, and should not continue in competition with the internist as it has in the past."

The physician himself, individually and in the medical societies, can do much to remedy these evils. He should be well prepared by schooling and internship for his work, should have a general knowledge of most of the scientific methods of diagnosis and a thorough knowledge of those which he can use in his own laboratory. He should make careful, systematic, physical examinations and perfect a technique of his own, and he will be surprised at the information he will gain thereby. He should ally himself with some good man in the several specialties, to whom he may refer cases and with whom he may co-operate to the patient's good and the mutual benefit of each, thus retaining his hold upon his patients and gaining in prestige by the association.

As a society, we should present a solid front against commercialized practice in the form of national health insurance and contract practice; as a body we should demand legislation against vending of patent medicines by agents who take millions of dollars from the poor and ignorant; and we should insist that every person who accepts fees for services to the sick should have the same license and certificate to practice which we worked so hard to gain, and which we prize so highly.

When we have done these things, we will have placed the family physician in his rightful domain, where he will again become the ambassador extraordinary and minister plenipotentiary, representing the home in all things medical.

THE DEARTH OF RURAL PHYSICIANS.

By C. B. GREER, M. D., Honaker, VA.

For some time the reading public has, in various ways, had its attention called to the shortage of physicians in rural practice. There are numerous angles from which to view this unfortunate situation, which in themselves do not solve the problem, but may prove

a means of suggesting an index to the situation.

Having done service in the capacity of a rural physician for several years, I have made some first-hand observations which result in certain conclusions. In making the following statements, I am fully aware that the opinions and theories of even an expert nature are more than likely to be diametrically antagonistic to one another. In this shortage of rural physicians, the rule of "cause and effect" stands out prominently and must be reckoned with, if the problem is solved.

In the practice of medicine, we have all been made to believe that the etiologic factor entering into a pathologic condition of the human body should be isolated and thoroughly scrutinized before a treatment is given. If not, the treatment becomes empirical and does not occupy a very scientific position in the realm of medical practice. In a consideration of this rural shortage of physicians, similar factors must, of necessity, be given the consideration due them, if a suitable remedy is to be found for the difficulty. Behind the etiologic factors we mention there are unseen forces at work, doing their bit in the evolution of mankind.

BAD ROADS make travel slow, unpleasant and sometimes impossible, whether it be in a car, buggy, or on the back of tried and always true "Dobbin." Referring to country travel, we are reminded of the doctor who was called out at night to go with a man to make a visit to his home. Before starting the farmer wished to know the fee for a trip to his place and was told that it was \$3. Upon alighting at his gate, the farmer paid the three bucks and informed the physician that the garage men wanted to charge \$5 for the same trip, he having come in on the night train.

PROXIMITY OF HOSPITALS. The more substantial class of rural patients are rapidly acquiring the "hospital habit." This includes the neurasthenics, the hystericals, the lying-in woman, the venereals, chronic chest and abdominal patients, and hosts of them too numerous to mention. These folks dish out their dollars to the "great I ams" of some hospitals and their "corn dodgers" to the family doctor who has long since served the purpose of a spook with which to frighten the child with stomach-ache into taking his evening dose of castor oil. Perhaps the country doctor him-

self is responsible for this state of affairs. Be that as it may, the country doctor does not now occupy the same relationship to the family as his predecessor of a half or even a quarter of a century past.

PRE-MEDICAL EDUCATION. Ten to fourteen years of unproductive work, along with an expensive and intensive course of study, is rapidly eliminating the strong, robust young man without financial resources from the field of medical practice, regardless of his fitness and natural adaptability for this work. This state of affairs is rapidly growing into a jungle of formidable proportions, to any one but the progeny of wealthy parentage. The man of brawn, muscle, and high class resolutions, born in the arms of adversity, is not eligible for work of this kind, because of a shortage of funds. The man of wealthy parentage is often a sort of single cylinder affair and refuses to run off macadam roads and boulevards. The country not yet being profusely supplied with these conveniences, he becomes an uncertain factor in the problem of producing a country physician.

STATE BOARD OF HEALTH WORK. First-hand advice and all kinds of information are given persons "free gratis" by our highly efficient health boards. True enough, this lightens the work of the country doctor, but it also helps him not to come under the income tax laws and is a step in the right direction to eventually socializing the practice of medicine. Most of us are of the opinion that socializing medical practice will not in the end be satisfactory to patient or physician. The initiative would gradually but surely be extracted from the patient and the physician would eventually become political pie to be dished out to pets by scheming politicians. If attempted, should the profession permit it?

SOCIAL ADVANTAGES. Though far superior to the influences from which the young physician originally came, four years at high school, four years of pre-medical college training, four years at the medical school (or five, as some have it), and one or two years' internship, make all told twelve to fourteen years of city life and social contact to be dispensed with in some manner. No ambitious young man can readily break the ties that bind him to the influences which surrounded him with the halo of achievement in the study and completion of his medical course. If they are easily

broken, it is also true that they were not efficiently made. The odor of new mown hay, the morning call of the quail, the lowing of cattle on a thousand hills are "as the sound of brass and a tinkling cymbal," when contrasted to the dust and clatter of a city street. It is a sort of down and out proposition for him to think of this when considering a country practice, and the result is that some of the city physicians would rather subsist on tooth picks and muddy river water than to live in the country and fare sumptuously every day, in the air of some peaceful valley, such as no other country but Virginia can afford.

The above facts will explain in part the dearth of physicians in the rural districts. However, the laws of compensation always seek an equilibrium, and we are convinced that a solution of this problem will eventually present itself to our profession, as we continue to progress towards the highest civilization possible for man to attain.

VERTIGO—ITS CAUSES AND DIAGNOSIS.*

By WILLIAM C. MOOMAW, M. D., Petersburg, Va.

During the past several months a number of cases of vertigo presented themselves for diagnosis and treatment. They were of such character and interest as to focus our attention upon this subject. The purpose of this paper, while laying no particular claim to originality, is to study, clarify and classify a symptom of disease occurring not only in the several departments of our special field, but in the field of General Medicine as well. It becomes necessary, therefore, to have a working knowledge of the source from which this symptom arises, and of its various types which might indicate a particular source of origin.

Technically, vertigo should be differentiated from such manifestations as "dizziness" or "giddiness", though these terms are often used synonymously in the literature, and are confused in the patient's statement of his sensations. Vertigo is invariably associated with a perverted state of one or more of the organs or functions of the body, while dizziness, or giddiness, may be and usually is purely psychological or physiological; as when one looks down from a great height or gazes upon a har-

rowing spectacle, or when, as in play, a child spins round, or when a constant current is passed from ear to ear, or the caloric test applied, or in markedly altered conditions of atmospheric pressure, as with mountain climbers and the opposite state, caisson workers. Hence, it would seem that the term "Vertigo" should be reserved for those subjective sensations contingent upon the several pathological states of the organs or functions affected.

Vertigo, as defined by Frussell, "is the consciousness of disturbed equilibrium due to a disturbance of the nervous mechanism which governs the relation of the body to external objects". Sensory stimuli from the specialized end-organs of the vestibular nerve, kinesthetic impulses from articular surfaces, their associated tendons and muscles, stimuli from the eye and its muscles, and possibly also from tactile terminals in the skin, are transmitted to certain centers in the hind brain from which motor stimuli go out to one or more muscle groups which have to do with the body equilibrium. Any disturbance, therefore, which initiates, un-times or delays the transmission of these stimuli, whether efferent or afferent, breaks up the muscle synergy, and gives rise to symptoms, one of which is vertigo.

The causes of vertigo may be classified with reference to origin as, (1) Aural, (2) Visual, (3) Nasal, (4) Toxic, (5) Circulatory, (6) Organic and structural changes, (7) Neurotic, (8) Paralytic, and possibly (9) Hereditary.

Aural vertigo, which is the most predominant form of true vertigo, may be due to a wide range of structural and functional changes and disturbances in the ear. Malignancies and infections, notably syphilis, may bring about loss of integrity of the structures involved, but the principal etiological factor is pressure exerted in various ways and in such manner as to alter the normal tension of the vestibular fluid; as for instance, tubal catarrh with blocking or stenosis of the eustachian tube, tubotympanitis with exudate in the tympanic chamber, acute catarrhal otitis media with blood or exudate, acute and chronic purulent otitis media with pus pressure, otosclerosis with stapedio-vestibular ankylosis, inspissated wax or foreign bodies in the external canal pressing on the drum membrane, these and possibly other disturbances are factors in producing pressure through the vestibular windows.

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology in Richmond, February 3, 1921

Within the labyrinth a change of pressure may obtain from anemia, hyperemia or hemorrhage, or from circumscribed, serous or purulent labyrinthitis or from perilabyrinthitis.

Visual vertigo is contingent upon false localization and more particularly and intensely with false movement of objects. Glasses used for the first time, or strong lenses as for aphakic eyes, or decentered lenses, cause objects to appear out of place because of prismatic deflection. Paralysis of one or more of the eye muscles produces to a still larger degree false localization, hence a more intense type of vertigo. This sensation is also intense when the eye acts in the direction of the paralyzed muscle, giving rise to false movement of objects. This is especially true when the trochlearis is involved, and gives rise to great annoyance and even danger in going up and down stairs. Disturbances of the nystagmus circuit, and optical nystagmus coming on late, especially miner's nystagmus, produce vertigo. This sensation is also associated with asthenopia in ill-sustained or definite accommodation insufficiency.

Nasal obstruction and accessory sinus diseases are given as causes, though the *modus operandi* is not clear. Vertigo is a fairly constant symptom in these conditions, and is probably due to consequential eye conditions, such as accommodation and convergence insufficiency.

Toxemia is often responsible for vertigo. The toxic agent may be either chemical or bacteriological; of the former, alcohol, tobacco, coffee, and certain drugs as the salicylates, quinin and others. Uremic materials, also, should be included. Infectious agents, principally from the gastro-intestinal tract, are causative factors and stand back of the stomachal vertigo of Trousseau.

Disturbances of the circulation as cerebral anemia in aortic disease, or from the hemorrhages and blood changes, and cerebral hyperemia in mitral lesions and arteriosclerosis are familiar causes.

Organic diseases of the brain causing vertigo are multiple sclerosis, tabes, brain abscess and brain tumors, particularly if in or near the cerebellum. Epilepsy, both grand and petit-mal and psychical, is usually preceded by vertigo which is often an aura of the disease.

Of the neurotic states, neurasthenia and

hysteria are the most prominent conditions with which vertigo is associated.

Paralytic vertigo is described as Gerlier's disease, and is found in epidemic form in certain parts of Switzerland. "The patients complain of violent vertigo, diplopia, temporary amblyopia, difficulty in swallowing and chewing, and on examination show ptosis and paresis of the extremities and of the muscles of the neck. The disease is paroxysmal in character. In the intervals between the attacks the patients feel well."

Some observers describe an hereditary form of vertigo about which little is known.

The foregoing citations cover nearly all, certainly the more important and most usual sources of this sensation, and should pave the way to a definite diagnosis of vertigo, which is the second phase of our study.

A patient presents himself complaining of vertigo, or as he expresses it, "dizziness" or "swimming of the head." How, then, are we to determine its nature and source? The process of diagnosis is one of elimination. In the first place it is well to keep in mind the fact that vertigo is purely a subjective sensation, and that many patients are unable to intelligently describe it, which makes it at best vague and indefinite. It is important, therefore, to ascertain as accurately as possible its exact nature. We should determine, for instance, whether the patient himself seems to rotate or shift, or whether the apparent movement is with surrounding objects, and if so, whether the movements are up or down or to one side or the other. Furthermore, inquiry should be made as to the conditions under which the attack is precipitated; as, when lying down, sitting or standing, stooping or rising from a low position, or during or following sudden movements of the head. The patient should be questioned as to the time and duration of the sensation, whether at day or night or both, whether the onset be gradual or sudden, periodical or constant.

Having taken the history, which usually reveals that the patient had been treated along the lines of least resistance and purged of his gastro-intestinal sins, we proceed to clear the field, and should be able definitely to exonerate or indict the ear, the eye or the nose.

Examination of the external canal and the drum, and inflation of the eustachian tube,

together with the history, will clear the diagnosis of the middle ear. Of prime importance is the elimination of labyrinth vertigo because of its close relationship to that of intracranial disturbances. To quote from Andrews, "The types of vertigo of chief concern to the otologist are those associated with intracranial disease or with intra-labyrinthine disturbances. It is sometimes very important to the neurologist to rule out the labyrinth before he can be quite sure as to the symptoms which seem to point to some intracranial lesion, and in this work the otologist should prove that his work and special knowledge are indispensable." In speaking of labyrinth involvement, this observer says **further that** "The classical picture is that afforded by so-called Meniere's disease, which is rare enough as such, but has so fastened itself upon the clinical mind that no mention of vertigo is quite complete without it. From a pathologic viewpoint, Meniere's disease is labyrinthine apoplexy, that is, a hemorrhage into some portion of the labyrinth. In the severe and extensive lesions, both the cochlear and vestibular portions of the labyrinth are involved, and we have, therefore, deafness, noises, nystagmus, vertigo, nausea and vomiting. Rarer symptoms are fullness in the head, cerebellar ataxia and diarrhea." This condition should not be confused with the Meniere's symptom-complex, which type is periodical, gradual in onset, and has a history of previous ear disturbance such as deafness, otitis media and the like. Meniere's disease proper is sudden, more intense in all of its manifestations, vertigo especially severe, and with a history of no previous ear involvement. The diagnosis of labyrinth disease is now greatly facilitated by the several methods of functional testing which may be had from many of the current text-books on this subject, and are elaborately worked out in the Barany method.

The diagnosis of visual vertigo is often made by the patient, when he discovers that by looking through the center of his lenses, or covering the paralyzed eye, or being in the dark, clears up the vertigo. Congenital nystagmus does not cause vertigo because the child learns to interpret the displaced images, hence there is no false movement; but in acquired or later forms, vertigo is usually present and must be distinguished from that arising elsewhere. The muscles are to be tested out with prisms,

the tangent plane, or other tests. It is well to recall that vertigo is especially severe in peripheral paralyses. Diplopia is very slight in paralyzes of central origin, therefore, vertigo is correspondingly so. Vertigo associated with nausea and vomiting would suggest intracranial factors with increased brain tension, on which state the ophthalmoscope would probably throw additional light.

Vertigo of nasal origin can usually be ruled in or out by a thorough nasal examination, x-ray of the sinuses and tests of the eye muscles. The nasal type of this sensation is not complained of except in movements of the body, as in rising or stooping, never when lying down as in the labyrinthine type.

In eliminating vertigo in the above three sources of origin, we shall have scored our part in the diagnosis, and may, then, refer the patient to general medicine.

5 Adams Street.

EPIDEMIC ENCEPHALITIS. REPORT OF A CASE.*

By W. P. JACKSON, M. D. Roanoke, Va.

On January 19, 1921, a patient with the following history came under our observation:

Family history and past history of no importance here.

She is 37 years old, single, and school teacher. Complaint at the time was trouble with eyes and nervousness. Patient states that just before Christmas she had a slight cold, and she noticed at night, while working over school papers, her eyes troubled her—vision would get dim and she would have to stop. About December 29th, she began to feel bad and had a dreadful pain across right shoulder. Took 5 grains calomel at bedtime and the next day noticed double vision, but felt better. She did not bother to see a doctor. Double vision continued and a week later she began to feel terribly tired. She could not resume her school duties after the Christmas holidays. Drowsiness also appeared about this time, which persisted for several weeks. She could sleep very easily and often slept a long time in the afternoon and again at night, but recently has not been sleeping well at night. She has had some giddiness. Pain in the arm has disappeared, and she has had no pain elsewhere. About

*Read before the Roanoke Academy of Medicine on March 21, 1921.

nine weeks ago she noticed a numbness on right side of face and in right arm. No numbness in right leg. Numbness involved only half the hand, thumb, index and middle fingers. She consulted her family physician, who advised her to have glasses fitted. This she did and said she was able to read for a few days after getting glasses. There never was any trouble with speech or swallowing.

Physical examination at time of first seeing her showed a patient looking fairly well. In talking there was a tendency to get tired. Both eye grounds were normal. Pupils were practically equal and reacted to L. & A. Winking was frequent. There was no ptosis nor nystagmus brought out by looking either to right or left or down, but there was considerable difficulty and strain in looking up. Muscles of mastication acted well and symmetrically. Jaw jerks active. Sensation of touch and pain a little more distinct on left than on right side of face. Corneal reflex more active on left than on right. Face symmetrical. Tongue protruded well and straight. Movement of arms good. Right arm tremulous. Biceps and triceps reflexes slightly hyperactive. There was a little difficulty in picking up objects with thumb and two first fingers on right hand. Movement of legs a little uncertain. Muscle strength good. Knee kick hyperactive. Bilateral patellar clonus. Ankle jerks hyperactive.

Lumbar puncture showed a cell count of 20 with lymphocytes predominating. Globulin test negative. Wassermann test with alcoholic extract antigen and cholesterinized antigen both negative.

Since this examination was made, patient has kept a quiet life and taken a little tonic, and potassium iodide.

Examination made a few days ago shows patient getting around and feeling very well but not able to resume duties on account of some nervousness and weakness. She feels giddy when on a car or elevator. There is no double vision now, but she tires easily when reading.

At present her extra ocular movements are fairly good with a definite effort on attempting to look up or to any extent either to right or left. Pupils react to L. & A. All facial muscles symmetrical. All reflexes are equal and hyperactive with the possible exception of being slightly less active in the right arm. No

disturbance of sensation is now made out on face or arm, but there remains a weakness of thumb, index and middle fingers of right hand. Patient writes with great difficulty and unsteadiness. Recovery, then, has been partial and very slow, but definite. Just whether there will be complete recovery is a question.

Another case that came under my observation while I was working at the Harriet Lane Hospital for Children, in the summer of 1920, shows another type of the disease. This case is reported by Happ and Blackfan, together with four others, illustrating insomnia following acute epidemic encephalitis. Briefly, the history is as follows:

A white girl, aged $5\frac{1}{2}$ years, was brought to Harriet Lane Hospital, July 6, 1920, because of inability to sleep at night. She had been well up to February 20th, on which day she became excited, talked foolishly, and developed an internal squint. This excitable state lasted for two days, after which time she became rational and the squint disappeared, but from this time she had not slept well at night. She would stay awake for several days and nights, and then sleep heavily all day. She was taken to a hospital, where she remained six weeks. Sleeplessness at night was noted there. On her return home, June 21st, she would stay awake until three or four o'clock in the morning; then she would sleep the better part of the next day. At times at night she would get very excitable and spit. She was admitted to the Harriet Lane Hospital, July 16, 1920, in order that her nocturnal behavior might be observed. The first night she slept all night; the second she was awake until 8 A. M., talking incessantly, tossing about and waving her arms in the air. From 8 A. M. she slept until noon. She was then quiet until evening, when she again became very restless, excited and active, and remained awake until 3 A. M. She slept until breakfast and, following this, slept nearly all day. During the night she was careless in her habits and frequently soiled herself. Since her discharge, July 11th, there has been no improvement in her condition, and she is allowed to sleep when she chooses during the day.

After reviewing those five cases, one of which I have just mentioned, the authors feel like unquestionably classifying such cases which show nocturnal wakefulness, excitability and restlessness, followed by deep sleep, almost

stupor, during the morning, and which are accompanied by a change of disposition and behavior during the waking period—these symptoms persisting for several months as a characteristic syndrome following acute epidemic encephalitis in childhood. They further feel that the term “lethargic” is unfortunate in that it does not embrace such cases that really belong to this disease.

There is a very good summing up of the symptoms of this disease given in London Letter appearing in the *Journal of the A. M. A.*, June, 1918, in which 87 cases are reviewed. In their summary, pyrexia was present in 41 cases early in the disease, in eight cases there was no fever, and in the others no definite information as to fever. There was headache in 31 cases, drowsiness in 29 cases, lethargy in 18, stupor in 13, asthenia in 12, coma in 9, vertigo in 17, delirium in 20, absence of lethargy in 3 cases, and sleeplessness in 5. Of cranial nerve involvement, there is given bilateral facial paralysis in 9, unilateral in 11, ptosis in 34, ophthalmoplegia in 18, diplopia in 18, strabismus in 10, nystagmus in 9, double third nerve palsy in 6, pupillary dilatation with failure to accommodate in 2. This helps to explain its being called acute infective ophthalmoplegia. Speech was affected in 5 cases, muscular rigidity in 10 cases, tremor in 9, and muscular twitchings in 6. Constipation was recorded in 35 cases, vomiting in 10, difficulty in swallowing in 9, and dryness of throat in 3.

The pathology of the disease as given by Flexner is described as affecting particularly the brain, and especially the gray matter at the base of the brain. The structures usually affected are those about the third ventricle, the aqueduct of Sylvius, the lateral ventricles, the pons, and the medulla.

There is a cellular infiltration, mononuclear in type, about the blood vessels and the nerve tissues themselves, small hemorrhages and an outpouring of plasma and lymph into the tissue. The lesions occur in nodular and in diffuse forms. The paralyzes of the ocular, facial, and other muscles arise from the invasions of the nuclei of the corresponding nerves.

It is interesting to note that there was an outbreak of so-called “Sleeping Sickness” in Germany in 1712 and another in Italy in 1890 called “Nona.” It is not known, of course, whether these epidemics represent the same disease, but there are some symptoms very

similar in each one, and especially interesting is the fact that they all followed epidemics of influenza.

Levaditi and Harvier, by intracerebral injection of emulsions of brain from patients dead of epidemic encephalitis, have produced lesions in rabbits that appeared similar to those in man, and from these rabbits a like disease has been transferred to guinea-pigs and monkeys. They further found that the virus would pass through Chamberland filters Nos. 1 and 3, and that its activity remained after exposure to 1 per cent. phenol for five minutes and after being placed in glycerol and kept at ice-box temperature for nineteen days, but that it was killed by heating at 55 degrees C. for one hour.

Strauss and his co-workers think they have cultivated a minute organism resembling the globoid bodies of poliomyelitis which may be responsible for the disease.

The treatment is largely symptomatic with the use of sedatives in the excitement stage and stimulants in the stage of depression. Morphine has been used successfully in respiratory failure. Patients have been treated for decubitus ulcers in the lethargic stage by almost continuous tub bath in a weak antiseptic solution.

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THE MANAGEMENT OF CERTAIN TYPES OF DIABETES MELLITUS.

By WYNDHAM B. BLANTON, M. D., Richmond, Va.

In a disease as complex as diabetes, it is apparent why special types need to be recognized and considered apart. Problems arising in the management of several of these types form the basis of this discussion.

EARLY DIABETES.—The pre-symptom recognition of diabetes depends upon the routine examination of the urine for glycosuria and the routine examination of the blood for hyperglycemia. Everyone is aware of the surprises that come of a routine urinalysis. Equally surprising are the results of blood sugar determinations. As a guide in determin-

ing the severity of diabetes, as a means in establishing tolerance after the urine has become sugar free, of knowing what appropriation the body is making of its intake carbohydrate, and as a method of ruling out renal diabetes, an estimation of the sugar in the blood is indispensable.

Often, the slightest yellow color is encountered in doing Fehling's sugar reaction on urine and one is in doubt whether to discard the result as meaningless or to report it as an indication of sugar. These reactions are seen frequently in the course of treatment of a diabetic, and are due to the faintest trace of glucose. In the supposedly non-diabetic these reactions are extremely puzzling. It is in just such cases that the blood sugar has been of the greatest service. In most instances, except those with low thresholds of excretion (renal diabetes), it appears that the concentration of blood glucose must reach 180-200 mgm. per 100 c.c. of blood before there is a spill-over into the urine. There is, therefore, almost double the normal blood sugar before we can be aware of abnormal carbohydrate metabolism by the urinary method. The most interesting and the most important span of the diabetic's life is that period during which he is piling up his blood sugar to the point of kidney intolerance.

A male adult, weighing 265 pounds, presented himself complaining of pain in the left leg. The physical examination was negative except for obesity and moderate hypertension. The urine, beside showing a little albumin and a few casts, gave an equivocal reaction for glucose. The blood sugar in this man was 180 mgm. per 100 c.c. of blood. A sharp reduction of his carbohydrates readily freed the urine from sugar and reduced his blood sugar nearly within normal limits. With normal blood and urine, his pain disappeared.

A boy of 9 years, fond of sweets, pale and under weight and infected with *ascaris lumbricoides*, presented himself for treatment. The urine gave an equivocal test for sugar. Blood sugar was 180 mgm. per 100 c.c. of blood. Without known alteration of diet, two subsequent examinations of the urine failed to show sugar; at these times the blood sugar was 125 and 140 mgm. per 100 c.c. blood, respectively.

A male, 25 years old, in the course of life insurance examination, gave a faint yellow equivocal Fehling's reaction. Blood sugar estimation at this time was 150 mgm. per 100 c.c.;

there were no symptoms of disease. The patient's diet was not abnormal and these urinary findings occurred on several subsequent occasions. Moderate reduction of the carbohydrate intake readily resulted in disappearance of urinary sugar and return of the blood sugar to normal. The patient was then cut off his carbohydrate intake entirely and the rest of his diet considerably reduced. The carbohydrates were then gradually added to the point where his blood sugar exceeded the upper normal limits. We considered this figure his carbohydrate tolerance and sent him away with instructions to live under it.

It is believed that the carbohydrate tolerance of all such hyperglycemias and equivocal glycosurias should be established and, to this end, the patient's diet should gradually be reduced to a point where the carbohydrate intake is well below that sufficient to produce hyperglycemia. The carbohydrate intake should then be gradually increased to a point where the blood sugar begins to exceed the normal (60-120 mgm. per 100 c.c. of blood). It is believed that this should constitute our criterion of carbohydrate tolerance and not the subsequent appearance of sugar in the urine.

Fat and protein should be given in sufficient quantities to meet the caloric needs of the patient, i. e., until the patient ceases to gain or lose at a desirable weight level. The patient sent away on such a diet, however, should not be allowed to remain without medical advice, because the probabilities are that the carbohydrate tolerance, in the absence of hyperglycemia, will shortly be raised, necessitating a new change of diet.

OBESITY AND DIABETES.—The predisposition of the obese to diabetes is well known. Of 1,000 diabetics analyzed on the basis of weight, only 10% were below the standard weight zone, while 15% were in it and 75% above it. (Joslin, *J. A. M. A.*, vol. 76, p. 79, 1921.) Every fat person is a potential diabetic.

The danger of acidosis in the fat diabetic is likewise well recognized. Body fat or ingested fat may serve equally well as the source of the poisonous split products of fat catabolism. Fasting may precipitate acidosis upon the non-diabetic obese as well as upon the diabetic obese. More dangerous is a high fat-protein diet. The rule is generally recognized, here as elsewhere, that fat must first be withdrawn from the diet and the protein and carbohydrate reduced in turn until urine is sugar

free. The essential thing to accomplish is the establishment of as high a sugar tolerance as possible in the presence of a normal protein intake. Fat is added with extreme caution later.

In the course of treating the obese diabetic, several pressing problems may arise. What of obesity itself—shall it be reduced? If so, how much? Not all patients wish to lose weight, especially when to do so requires exercise and quantitative as well as qualitative restriction of diet for which they have no liking, and especially when their friends begin to fail to recognize them on the street or to alarm them with remarks as to how badly they are looking. The psychology of the patient has to be considered and acted upon.

What of the problem in an obese diabetic whose sugar tolerance you are trying to raise? He has been rendered sugar free and is losing weight. With each attempt to add an additional 10 gms. of glucose to the diet the blood sugar sweeps up to the 180 mark and now and then spills over with a copper reaction in the urine. In the meantime, a ferric chloride reaction in the urine persists in spite of absence of fats in the intake.

In such cases, what is to be done? Acidosis, sugar tolerance slow in establishing itself, patient on very low caloric intake, still fat but losing weight and complaining of weakness and poor diet! How serious is the persistence of the ferric chloride reaction? Shall you be satisfied with aglycosuria or attempt to reduce the hyperglycemia? What level of blood sugar shall be your desideratum? In such cases, it is a comfort to know that acid bodies in an aglycosuric urine are of little danger.

The following case presented just such problems. The patient came under observation, weighing 235 lbs., with 7 gms. per 24 hours of sugar in the urine and a blood sugar of 260 mgm. per 100 c.c. of blood. With partial starvation came acidosis which continued during the time of establishing carbohydrate tolerance, in all about 1½ months. In view of the fact that the urine was sugar free, this acidosis was disregarded. It has required six months, during which sugar tolerance was carefully built up, to get the patient to her present status. Blood sugar 140 mgm. per 100 c.c. blood, no sugar in urine, no diacetic or acetone, weight 209 lbs., intake carbohydrate 68 gms., fat 88 gms., protein 60 gms., calories 1343.

In such a case, it is imperative to raise the carbohydrate tolerance and six months of effort are repaid when it can be done. It would never have done to lose sight of her on a high protein-fat intake.

TUBERCULOSIS AND DIABETES.—The dietetic management of four cases of diabetes complicated with tuberculosis has recently occasioned us considerable worry. Landis, Funk and Montgomery (*The American Review of Tuberculosis*, vol. 2, No. 11, Jan., 1919) have lately published their impressions of this problem and declare themselves in favor of Allen's starvation plan and tolerance building. Our experience with this method has not been productive of striking results.

The first case was a female of 49 years who presented herself complaining of a cough. She had no symptoms of diabetes. She gave signs of third stage pulmonary tuberculosis in an apical cavity and a positive sputum. A routine examination discovered sugar in the urine. This quantitated 103.5 gms. per 24 hours. The blood sugar was 320 mgm. per 100 c.c. of blood, NPN 26 mgm. per 100 c.c., CO₂ 50, Wassermann four plus.

She was fairly comfortable and able to be up and about. Nevertheless it was thought best to get her sugar free and, with this view, the diet was gradually reduced over 10 days to water, black coffee, and 7 ozs. of whiskey. She became sugar free on the sixteenth day and remained so for three days while the carbohydrates were being raised to 20 gms. She then began to show sugar again and was again put on water, black coffee and alcohol. She remained on this diet 10 days without again becoming sugar free. On the 21st day of her stay in the hospital her blood sugar was 350 mgm. per 100 c.c., blood CO₂ 50; on the 28th day she suddenly became weak and died, still starving and still showing sugar. During this time she lost 10 lbs. She never showed more than a moderate amount of acetone and diacetic acid in the urine.

In view of the fact that the patient had no symptoms of diabetes, it might seem like dietetic meddling to upset radically her method of living. However, as she was she stood in constant danger of being swept off by coma. On the sixteenth day, instead of first attempting to build carbohydrate tolerance, she should have been put at once on 100 gms. protein, and tolerance established later.

The second case was a man of 40 years who

complained of cough, purulent expectoration, dyspnea and a loss of 75 pounds, swelling of lips and inability to use his left arm. Physical examination showed third stage tuberculosis, neuritis of the arm, thickness of speech, and a large ulcer of the left leg. On routine examination of the urine, sugar was found. This quantitated 80 gms. per 24 hours. Blood sugar was found to be 198 mgm. per 100 c.c., CO₂ 68, Wassermann negative. There was a trace of diacetic acid. The patient was put on starvation and alcohol. In four days he was sugar free. Protein was then added rapidly, carbohydrate and fat more slowly. On the seventeenth day of observation, he was taking fat, 37 gms.; protein, 88 gms.; carbohydrate, 48 gms.; and whiskey; in all 1,300 calories. The urine was sugar free. His caloric intake seemed quite sufficient to meet his energy expenditure. Especially does this seem true in the light of the calorimetric findings of McCann and Barr (*Arch. Int. Med.*, vol. 26, p. 663, 1920) which go to show that over-feeding is unnecessary in tuberculosis and that in fact the food demands of these patients are extremely modest. On the seventeenth day, the patient refused food and suddenly died. In view of the fact that for the greater part of the time this patient was under observation, he had to be urged to eat all the food that was offered to him, and also the very short duration of his starvation, lack of nourishment seems to have played very little part in the result. After the first four days of starvation he did not lose any weight. Though he was able to be up until two days before his death, he was very weak and it is felt that he died of tuberculosis.

The third case was a man of about 30 years whose complaints were weakness, loss of weight, polyuria, polydipsia and polyphagia for seven months. His urine showed quantities of sugar. The blood sugar was 240 mgm. per 100 c.c., CO₂ 53, weight 83 lbs. His tuberculosis was not seriously regarded. His diet was reduced. He was then starved. On the twelfth day he was sugar free. He was then allowed 60 gms. protein. By the 22nd day he was taking in addition 90 gms. of fat and by the twenty-fourth day, 50 gms. carbohydrate. After this, starvation was thrice instituted with success to free the urine of transient slight traces of sugar.

On the forty-seventh day his temperature rose to 103° F. The sputum contained many

tubercle bacilli. Several days later there were well developed signs of bilateral tuberculous pneumonia of the hilus type, with central softening rapidly developing. The temperature continued and the patient grew gradually worse, while the urine continued free from sugar and acid bodies. The patient was taking 1,600 calories daily, 50 gms. of which were carbohydrate. On the seventieth day, the patient died. Autopsy confirmed the physical findings.

The patient is interesting because of the sudden flaring up of his pulmonary tuberculosis several weeks after the radical changes in his diet. His diet was carefully controlled and calorically sufficient for his body needs. Sugar ceased to appear in the urine. Thus in 70 days, our apprehension shifted from his diabetes to his tuberculosis which was rapidly fatal. His diabetes was controlled by diet. It is not believed his tuberculosis was made worse by it. It is thought that this end would have come just as quickly and from the same cause had any other course been adopted.

The fourth case was a man of about 45 years who came under observation from loss of weight, weakness, cough, expectoration and pain in the chest. It was further elicited that for one year he had had polyuria, polyphagia and polydipsia. His Wassermann was four plus. One month previously he had been in a tuberculosis sanatorium. At the time of examination his sputum was negative and his chest signs equivocal. His urine contained 160 gms. sugar per 24 hours. His blood sugar was 380 mgm. per 100 c.c., NPN 28. On a reduced carbohydrate intake before starvation was attempted, urine sugar dropped to 10 gms. per 24 hours and later to a slight trace of sugar. This continued on about 1,200 calories' intake, 37 gms. of which were carbohydrate. No changes were noted in the patient's chest after nine days when the patient became alarmed at his loss of weight and broke training. He had dropped from 101 to 88 pounds.

OLD AGE AND DIABETES.—Diabetes forms an important chapter of gerontology. In the old, the disease is frequently encountered associated with serious complications. The therapeutic problem is then even more complex, as for example in arranging a diet for a diabetic nephritic.

A man of 76 years, whose diabetes was of twenty years' standing, showed in addition fatty degeneration of the myocardium, arterio-

sclerosis and chronic nephritis. He eventually died of chronic uremia after two months' confinement to his bed.

As a matter of fact, this patient was never rigidly restricted as to his carbohydrate intake and was in consequence never free from glucose in the urine. His complaint was that he was already losing strength and the suggestion of further reducing his diet or starvation never secured his approval. But on his death bed, nature did what he would not allow his doctor to do in the earlier stages of his disease. The anorexia and vomiting which accompanied his chronic uremia induced such tissue starvation as to absolutely free his urine of sugar and acid bodies. His blood sugar in the meanwhile fell from 280 to 170 mgm. per 100 c.c. of blood.

Diabetes of long standing implies a certain successful adjustment on the part of the body to its abnormal metabolism. Such cases are difficult. Radical changes in their diet have to be made with extreme caution and very slowly. To do otherwise is to court disaster. Diabetes in the old is apt to be of this type and demands great care in its management.

On the other hand, diabetes does begin late in life. Joslin reports 25 cases with onset after 70 years. Such patients without, and often in spite of, complications, should receive the rigid treatment of younger diabetics in an effort to render them sugar free and bring relief to distressing symptoms. Because of old age, no diabetic should be denied the benefit of modern diabetic treatment.

A woman of 70 years had received treatment for about one year. She presented herself with symptoms of weakness, pain, loss of weight and pruritus. Her blood sugar was 420 mgm. per 100 c.c., plasma CO 50, urinary sugar in 24 hours 63.6 gms. and acetone and diacetic acid were present. After preliminary omission of all fats, her protein was halved and then her carbohydrates gradually reduced to a few grams, when she became sugar free, the blood sugar standing at 170 mgm. per 100 c.c. Covering a period of 2 months, her tolerance was built up until at present she is taking from 40 to 60 gms. of carbohydrate and sufficient fat and protein to maintain her weight content at the desired level. Her blood sugar is about normal (135 mgm. per 100 c.c.) and the urine is free from glucose and acid bodies. She has gained 20 pounds and has no symptoms of which to complain.

SUMMARY.

Four types of diabetes have been discussed from the point of dietetic management.

300 West Grace Street.

THE MISSION OF MEDICINE.*

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When, by the divine Creator's command, man came into existence and stood upon the threshold of a new world endowed with all the attributes and physical and mental faculties of a perfect being, by reason of his surroundings and unchanging and unchangeable laws of nature he became an involuntary subject to the forces of nature.

Physical necessity required air, water, food—sustenance. The struggle for existence demanded protection from the changes of the seasons, the inclemency of the weather, the forces of nature, and likewise the violence of animal life. The laws of nature control the growth and decay of all life, both animal and vegetable.

Ignorance of the forces and provisions of nature brought accidents, poisonings, injuries, diseases, untimely decay and death. Just as the physical necessities prompted man to acquaint himself with the provisions of nature intended for the continuance of life, his sustenance, growth and development, so the occurrences of accidents, calamities and illness caused man to consider the decay of life and the final destruction of the physical being, man.

The process of life, growth and decay, the phenomena of reproduction, excited first surprise, then attention and thought; while the afflictions and ills of life caused primitive man the greatest concern. It requires no fanciful stretch of imagination to convince one that the occurrence of pain gave the first human being great concern for relief therefrom. It may well be imagined that the same or greater concern was displayed for relief in cases of accident, illness or death.

Go with me in your imagination to the couch of leaves and flowers whereon lay the now to be first mother in the throes of labor and see her companion, alone and helpless, trying in the anguish of despair to relieve his

*President's address before the Valley Medical Society
May 26, 1921.

helpmate. It was here that the thought of man turned to the art of healing, that medicine had origin; for here the noble impulse to help man in pain or distress came into existence. Thus, it may be seen that through necessity man's first thought of the healing art was inspired by the pain attending the natural processes of life. How naturally would he apply or associate the same thought to the more unyielding pain of accidents or disease!

Founded, therefore, through necessity, the study of the processes of nature and the application of means for the relief of the ills of life, at times crude, hurtful in the extreme, passed on from day to day, from one to another, through succeeding days and years to generation after generation, by word of mouth or example, selecting that remedy or method, or choosing those who showed the more successful knowledge, until, out of the crude art of healing, stimulated by the exchange of suggestions, and later led by the dim light of empiricism, aided by the growth and benefit of experience, there evolved rational medicine. The growth of rational medicine has been so rapid that necessity now demands that it be composed of highly specialized interlocking branches.

From this broad and comprehensive, though hurried, survey of the origin and growth of medicine, let us turn to the future to see what lies before; what yet awaits the accomplishment of medicine and how medicine may best serve mankind. That is, as I see it, the mission of medicine.

The task of medicine of the future, therefore, is the proper directing of the conduct of man's physical and mental life. Under this broad grouping may be placed, and there is required:

First, the study of man, that is, the structure, composition, and forces of the body in the most comprehensive and exhaustive way. This study should include the subjects of histology, anatomy, chemistry, and physiology of the human body, indeed of all animal life, in order to fix a normal standard.

Second, the study of the departures from the normal, that is, diseases. It may be asked if all is known of diseases that may be known. By no means—far from it. It should be required that every physician and, for that matter, everyone applying means to cure or treat diseases, should keep accurate records of all

available and pertinent matters relative to the patient, the nature of the disease process, means applied for the relief thereof, and the reason for applying the particular treatment in the given case. Such records should be made open to inspection, and available for collection and study in order that the truth in medicine may be established in all its forcefulness. This record should be made a required part of every physician's work and should form the basis for his permit to continue the practice of medicine, or in any way aid or direct the conduct of those seeking his services. This should be required in every case, and, further, a copy of the case history and record of all the treatments of the case in question should be made a part of every record of death.

Many evil and dangerous methods of practice would be banished from the face of the earth. Medicine, and I use the term here to apply to the practice of the art of healing the sick, is anxious for the truth to be known. To accomplish this, a careful record of all pertinent or salient data connected with the person and the case should be obtained in all cases. The results of a full study of this data would then show the truth. It will take a long time and a great deal of labor to accomplish this work, but it must be done.

The study of hospital cases will lead the way, because the study of cases entering into the hospital for treatment, is, as a rule, more carefully and thoroughly done than in private practice. The hospital must furnish the facilities for the proper recording and study of cases. Indeed, this is essential and demanded that hospitals may meet the minimum standard exacted by the Association of Hospitals and the American College of Surgeons. The keeping of such records is not difficult nor laborious, and at once a splendid improvement in the work of the hospital will be observed. More accurate diagnoses will be made and, therefore, more appropriate treatment applied and better results obtained. The same will be found true in private practice.

The truth is desired by medicine; the truth is essential: the truth will establish medicine forever as the leading science and the most beneficial and far-reaching agency for the welfare of man. The truth will set medicine free from the shackles of empiricism, dogmas, and forever silence the voices of ignorant and

selfish cults and practices. The truth will lift the light of medicine till all shall see and become the recipients of its beneficent purposes and influences. Let all who seek to direct the agencies intended for man's relief from disease submit to a board of medical review the record and management of all cases in order that evil practices may be eliminated and correct methods established.

I shall not, at this time, attempt to show the great importance of medicine, for one only needs to point to the achievements of modern medicine and surgery, to the far-reaching benefits of public health measures, and to the successful re-education and restoration of the crippled and deformed through the means of rational medical procedure. I submit that while this is most desirable, the accomplishment can only be made possible by every hospital and everyone engaged in the practice of the art of healing furnishing a truthful record of every case coming under care. There is needed, therefore, for this task, broadminded and unselfish men, men of attainment who are willing to search constantly for the truth in order that rational medicine may progress to the exclusion of all quackery and irregular methods of practice.

The quack and irregular practitioner, unlearned, unscrupulous and untruthful, pervert public opinion and hinder the establishment of the truth. Men who do and dare, the men with initiative, are the men who force themselves to the top. Caste, professionalism, unionism, cliques and clans, even groups, may tend to hobble initiative, and by reason of domination or radicalism or ultra-conservatism limit the progress and the influence of medicine.

There never was a time in the history of the world when medicine assumed such a prominent place in human affairs as it does today. The individual physician who measures up to the high requirements of his calling is a more looked-up-to man in the community than ever before, for whatever real regard the public has for medical men is due to the fact that they are an unselfish group of solid citizens that fulfill an unusual private and public function.

In order that the most rapid and sanest progress may be made, that the truth may be early and finally attained, the sick should receive all the benefits of hospital treatment. To

this end the active co-operation of the public is required, and just as the public becomes fully educated to the benefits of hospital treatment, just so will the public adopt the plan of co-operating with hospitals in the care of the sick. Then, hospitals will either receive through public contribution or taxation sufficient funds for properly conducting the treatment of the sick.

Medicine from the first subscribed to a code of ethics—of right living—and has always been guided by idealism, and maintained an honorable attitude in the welfare of all public affairs. In the private walks of life men of medicine have left examples of conduct, loyalty, fidelity, truthfulness, patriotism, and unselfish devotion to the service of mankind unequalled and unsurpassed. When men of this type dedicate themselves to such a task, no obstacle, save time, can obstruct the fulfillment of the mission of medicine.

The organization of a new medical association must needs give ample reason for its existence. The Valley Medical Association seeks to enlist the services of all the physicians of the beautiful and historic Valley of Virginia in the effort to aid the establishment of the proper public esteem for medicine to render such service to mankind that the future will regard it more honorable and distinguishing than that of arms. Medicine is full of human interest and appeals, therefore, to the unselfish man who will take the time to mix good fellowship and get-together talks with common sense, which is the natural foundation of successful medical societies.

The task is outlined. Its accomplishment rests with you. Of the final outcome I have no misgivings. When this is consummated, idealism of medicine will be accomplished, the truth will be established, and rational medicine will then serve as the most beneficent friend of mankind.

ANALYSIS AND TREATMENT OF A CASE OF JUVENILE APHASIA.

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Aphasia is a term applied to a condition caused by disorders of the faculties of language. It may include a disorder of both language appreciating centers and the lan-

guage producing centers. The first affects the centers of: hearing, vision and touch; the latter, the centers having to do with the emission of language, or the center of speech and that region controlling the producing faculties of writing and gesticulation.

One classification divides aphasia into two kinds: motor and sensory, according as the two processes of reception and emission are affected. Briefly: *Motor Aphasia* includes the failure to depart with an expression equivalent to ideas formed. There is then a loss of some forms of speech utterance for which an evocation of articulatory kinaesthetic memory is required. This affects the movements of articulation, making the person unable to produce words necessary for the expression of ideas; it affects the movements used in writing, making the person unable to produce writing necessary for expressing ideas; also affects movements used in gesture language, making the person unable to express ideas by gesture or sign. These three forms of Motor Aphasia have been called "Aphemia," "Agraphia" and "Amimia," respectively.

Sensory Aphasia includes the failure to receive communications and make them fit spoken words. This affects that part of the brain concerned in seeing or understanding written words, and is known as "Word-blindness"; it thus affects reading. It may also affect that part of the brain concerned in auditory perception of different words; also that part of brain having to do with memories of gesture language. These conditions have been called "Alexia," "Word Deafness," "Sign Blindness," "Apraxia," respectively.

Another classification subdivides Sensory Aphasia into *Word Blindness*, *Sign Blindness*, *Optical Agnosia*, and *Word Deafness*. We may add a list of mixed forms known as "*conductive aphasia*," "*paraphasia*," and "*jargon*." The first forms result from failure in emissive faculties; the latter, from failure in the receptive faculties.

These may be all present in partial forms. There may be some motor and some sensory aphasia present, but not all forms of either in one case.

CASE: R. Mc. Referred by Dr. John A. Lichty, Pittsburgh. Age 18. Admitted to Wildwood Hall, October 14th, 1919. Speech difficulty dates from attack of diphtheria the previous May, which resulted in a right-sided hemiplegia due, presumably, to an embolus.

The paralysis and aphasia were nearly complete at first, but gradually function became partially restored until the boy was able to get about and make some little use of the affected limbs and could, very inadequately, express himself in his own family circle, though he was never sure that he would properly express his thoughts and would attempt little more than monosyllables. His sensitiveness regarding his condition had caused him to become very much depressed and morose and the fear of making mistakes in language had resulted in inhibition of thought and expression which tended to aggravate his difficulties.

Taking up signs of *Sensory Aphasia* in case studied we find the following conditions present to some degree:—

Word Blindness or Alexia.—Patient cannot read printed matter well enough to grasp meaning at once. He does not recognize some of the very simple words at sight. When the word is spelled for him, he recognizes it, but has difficulty in saying it at once. When he comes to the word "drum" he says "beat"; to the word "bell" he says "ring." When he came to the word "measured," he beat a measured time with his hand to show me he understood the word, but can not say it. He miscalls some words, saying "is" for "it," "with" for "which," but realizes his error when he reads aloud. He spells a word through, pointing to each letter, but with great difficulty. Sometimes, for a few seconds, the word "the" will convey no meaning whatever; then he reads it correctly. He anticipates words leaving out small words as, "His hair is long" for "His hair is crisp, black, long." If corrected and started again, he omits many words and mixes the sequence. He can not read his own writing, or recognize mistakes in his own writing. He can read to some extent to himself and grasp the meaning of what he reads. From this we draw the conclusion that though word blindness is an element, it is a small one and that the difficulty in reading comes more from the panic resulting from the inability to produce sounds necessary for words.

There is no *Sign Blindness* present as patient can always resort to gesture language when difficulty arises with speech language. Also no *Optical Aphasia*, as patient is able to understand significance and uses of things around him.

There is no *Word Deafness* present as patient is able to hear and receive auditory per-

ception without difficulty. Understands all spoken language, interprets all sounds, carries out commands quickly and finds his own mistakes in his speech language. He can also enjoy matter read to him.

As for the symptoms of *Motor Aphasia*, the following conditions are present: That form of Motor Aphasia called "Aphemia," and having to do with center for the memories of the movements of articulation, resulting in the inability to produce the words necessary for expressing an idea. This involves the loss of some forms of speech utterance for which an evocation of articulatory kinaesthetic memory is required. Patient sees letters, but cannot say them at once. Miscalls letters often. By means of gesture or sign, it is found that he recognizes them at once but cannot say them. This results in a loss of spontaneous speech. There exists also an inability to repeat words correctly the first time. He says "pell" for "spell," "olding" for "oldest." Sometimes the words are so confused that they are unintelligible. He will recognize mistakes himself and after many repetitions can say them correctly. He uses many wrong (inappropriate) words as "I am Lamertine" for "I live in Lamertine." The patient realizes this difficulty and seems disgusted that he cannot say what he thinks. This causes an inability to spell correctly. He cannot spell aloud the simplest words on first trial.

There is a slight difficulty in writing with the right hand, but it is doubtful that this comes under the term *Agraphia*, but rather from an inability to express thoughts in writing. The memories for muscular movements in writing are intact, but the confusion comes when patient is asked to write spontaneously. Corresponding to the loss of forms of speech utterance for which a memory of kinaesthetic articulatory movement is necessary is a loss of forms of writing for which a memory of muscular movements used in writing is necessary. Corresponding to wrong sequence of words and words left out. (See *Conductive Aphasia*), repeated, and confusions in speaking is found wrong sequence of words, misspelled words, words repeated and illegible in writing. Also wrong words are used to express the idea. "I am Salem" for "I live in Salem." Patient copies—graphic or printed—perfectly. Writes all figures in sequence.

The power to write voluntarily and to dictation is not entirely lost, but it is not intact, corresponding to the difficulty in speech. For

example: Spontaneous note written to friends reads: "To Havey. How doing uasest things you? R. S. M." When asked to read the note he could not, and attempted to make over words. When asked what he wanted to write he said, "What are you doing today?" Another was written: "Miss Chlorne: To yer a rains day yor was doing?" This was for: "Miss Colcord, this is a rainy day. What are you doing?" The degree of inappropriate words corresponds to his speech defects.

Dictated work shows the same defects: For "I live in Salem" writes "I am live Salem," for "My room has white walls" writes "The my whitter ralls," for "The trees are turning color" writes "You color trees coloring." He is unable to dictate letter in correct form.

Conductive Aphasia is a condition affecting the associating tracts in the so-called zone of language. The result is that the patient skips words, repeats often and talks confusedly. This is caused by a failure in the emissive speech faculties in this case, rather than a defect in the receptive faculties. The "Lord's Prayer" was given for him to say because he once knew it. He stumbled over it, leaving out words and getting them in wrong sequence. "Kingdom come in Heaven" "Bréad—give." Also "Psalm of Life" said "Tell mournful numbers—life is but an empty dream—For the slumbers not what they seem," etc. On frequent repetition of poem, he could say it all without mistake. He will repeat words in sequence, but with great effort. He knows that what he is saying does not sound right.

Patient responds positively to "Proust Lichtheren Test" for Internal Language. (Stated gestures to show appreciation of number of syllables contained in a given word.)

Association powers intact. When asked to give words called to mind they were as follows:—

Flower—"Beautiful."

Tree—"Chestnuts."

Light—"Dreary day."

Street car—"Butler Short Line."

Food—"Supper."

Garden—"Mother Nature."

Diagnosis: Partial Motor Aphasia including slight Aphemia, Amimia, Conductive Aphasia (marked), Paraphasia (slight), and Alexia.

Treatment:—

ARTICULATION FOR THE DEVELOPMENT OF VOICE POWERS.

BREATHING EXERCISES:—Diaphragm breath-

ing: Place hands on diaphragm, keeping throat and pharynx well open, current directed well forward from the throat. Inhale quickly—exhale slowly—inhale slowly—exhale quickly.

Hands sideward upward inhaling.

Take deep breath and exhale slowly on (ah) for tone vibration, also (ah—la—la).

Count with metronome.

EXERCISES FOR SPEECH ORGANS:—Exercises for larynx and pharynx to lower the base of the tongue and render the tone full and smooth.

“A—CH”

“GA—CH”

“CA—CH”

Exercises for lip, tongue and palate:

“A—LA”

Pout lips.

Exercises for development of kinaesthetic articulation processes.

TECHNIQUE FOR ARTICULATION.

Training in melody and flexibility in tone:

“How do you do?”

“Papa” “Water”

Octave twist on “papa”—“water.”

Combination of vowel and consonants (initial and final explosives) initial and final vowels as:—

ba—be—bi—bo—bu.

da—de—di—do—du.

ab—eb—ib—ob—ub.

ad—ed—id—od—ud.

Practice of dentals and linguals: d—t—n—l—r—and of gutturals: g—ch—k.

Use combinations as found in approved lists by modern authorities.

Note:—Take up about one-fourth of time for this work.

Exercises to Stimulate Language Centers. To correct imperfections in sequence of words.

Count to 100.

Recite alphabet.

Recite any known poem as: Village Blacksmith, Lord's Prayer, Psalm of Life; this is for stimulation of motor-kinaesthetic memory, to reinstate lost form of speech utterance.

Read with him occasionally to develop confidence, then let him read alone, interpret reading.

Stimulation of spontaneous speech utterance.

Repeat words rapidly after instructor, occasionally call for sentences out of words.

Read aloud some short interesting selection,

instructor helping over hard places. Reading to reorganize visual memory.

Spell familiar words.

Development of Spontaneous Speech.—Questions involving quick decisions.

Recitation between two people involving quick thought and questions. Insist upon expression by complete sentences, also on his expression of ideas by conversation.

Note:—To establish consecutive and spontaneous speech for the expression of ideas in a clear concise way, repeat sentences thought out by patient until they come easily.

For the reconstruction of speed which is faulty in that there is a lack of sequence and a dropping of words, use Harrington and Cunningham's "First Book for Non-English Speaking People." This will help to re-establish ordinary expression, and to make it more connected.

This is my head.

That is your hand.

I have one chair—We have.

He has one chair—You have.

She has one chair—They have.

Those are your hands.

How many eyes have you?

Show me your pencil.

Please may I have.

I am. We are.

He is. You are.

She is. They are.

Exercises.—“This” and “that” with possessive pronouns:—

Conjugate.—This is my pencil.

This is your pencil.

This is his or her pencil.

This is (our, your and their) pencil.

This is my pencil, etc.

This is a pencil.

This is *the* pencil.

If patient can go through the construction of all English sentences involved in English grammar, in time he will have gained back all memory of sequence of words, making connected thought.

Use Sand Paper Letters of Madame Montessori.—Trace letters one by one—saying letter (to re-establish muscular kinaesthetic memory of writing and articulatory kinaesthetic memory of verbal language).

Make vowels and consonants with mouth—exaggerate each position. Make combinations of simple vowels and consonants with mouth.

Example:—ga—ge—gi—go—gu.
fa—fe—fi—fo—fu.

Make words from combinations:—Say
ga—ge—gi—go—gu.
gate—get—give—got—gun.

Make word with letters: Example:—
gate—get—give—got—gun.

Trace word made with letters saying letters and word.

Write spontaneously words on cardboard:—
gate—get—etc.

Take each consonant with each vowel until patient knows all letters; can say them; write them; and recognize them in other words.

Use compound consonants and vowels in the same manner.

Gradually increase number of words until his vocabulary is larger. Have patient use sentences by: Saying them (re-establishing of kinaesthetic articulatory memory);

Tracing them (Muscular memory training);
Writing them (Muscular memory used in writing);

Reading them (Visual memory association)

Take simple stories and read them to patient have him tell the meaning. Then have him repeat them afterward word for word. (To establish memory of connected trains of thought and natural sequence of words.)

ARTICULATION LESSONS. (After three months' treatment.) At this time work includes: *Repeating* letters, words, phrases and sentences after instructor. Use poems that are new to him. Use: "First Book for Non-English Speaking People."

Speaking aloud: 1. Asking questions.

2. Responding to questions.

3. Giving in his own words the gist of a story read to him.

4. Have him recite poems that he has known or has learned recently.

5. Make sentences—having given three substantives (as: pencil, paper, letters).

6. Conversation to bring out reasoning—quick thought, and connected sentences.

Reading: 1. Read lessons in the "First Book for Non-English Speaking People."

2. Read poems he has known at one time.

3. Read poems he *does not know*, also prose can be read that he *is not* familiar with the thought that it contains. Prose that he is familiar with.

Writing: Write sentences to dictation.

Alphabet and spontaneous sentences.

Spelling: He is reading some sentences to himself and giving the material back without looking.

The patient now shows considerable progress.

Repeats: "Lord's Prayer" and "Psalm of Life" without mistake. Leaves out *no words*—*skips no words*—mispronounces only a *very* few.

Reads: Skips fewer words—leaves off a few syllables as "sudden" for "suddenly," also miscalls a few words; "muttered" he calls "murmured," but does not anticipate words and does not hesitate long on words nor does he leave out small words.

Has established all small connective words with grammar review, as *pronouns*, *articles*, *adverbs*, *verb-forms*, also *sentence form* and *natural sequence*.

Speaking: Words have better sequence. Fewer words are mispronounced. He can express himself with greater accuracy and less hesitancy. There are fewer inappropriate words used.

Spelling: Difficult yet. Unable to say correct letters but knows them.

Counting: Some mistakes in counting still. Merely articulatory.

Writing: Better sequence, etc., corresponding to speaking. He can read to himself better, understanding what he has read. This would seem to bear out the supposition that a certain amount of nervousness was a factor in the condition.

After six months' corrective speech work, R. Mc. has completely gained back all forms of speech utterance and means of communicating language either by speaking or writing.

He can talk readily and confidently, can read aloud and to himself both, as well as before the trouble occurred. This has been brought about by a consistent consideration and correction of each phase of the faulty language.

The voice which was noticeably weak at first has become stronger, more resonant, and the vibrations of time truer and more steady.

He repeats long sentences after instructor perfectly, with correct sequence of words, no word miscalled, and none left out. The emphasis is natural and he speaks with a confidence so noticeably lacking before.

He is able to recite spontaneously selections of verse which he had known before, without mistake.

There is no longer trouble with the articula-

tion depending upon the kinaesthetic memory or the production of sound necessary for speech. All letters are named correctly, all sounds made quickly and easily. On sight of letters he is able to name them immediately, when before a long period elapsed before he could pronounce or name.

He reads as readily as before, leaving out no words, miscalling no words, and in proper sequence.

The improvement in writing, while yet somewhat hampered by the paralysis, corresponds to the improvement in speech. He writes sentences correctly, leaves out no words, writes in proper sequence and readily to dictation. Misspells no words, also spells orally words which were difficult before because of failure of emission of speech.

All this goes to show that case has regained the power of emitting language by speech and writing which he had partially lost; that whatever difficulty lay in the centers having to do with the memories of articulate speech and muscular kinaesthetic memory of writing has been cleared up. He has re-established those memories by constant repetition, and by daily practise of exercise carefully planned to develop the powers of communicating thought and regaining his confidence.

905 Keenan Building.

SYPHILIS OF THE STOMACH.*

By F. C. RINKER, B. A., M. D., Norfolk, Va.

Today we are more interested in the attempt to relieve symptoms by first determining a pathological cause and then treating the cause, than we are in attempting the amelioration of suffering merely by the empirical uses of drugs and surgery. Indeed, the laity are no longer satisfied with such evasive answers as "rheumatism," "indigestion," and many other such meaningless terms. On the other hand, they want to know, "What is the cause of my symptoms?"

In the search for underlying pathology, syphilis has become permanently fixed in the minds of clinicians as a possible factor in the causation of disease.

My reasons for selecting this subject for presentation to you are twofold: First, because during the past year I have had five cases of gastric syphilis who have received

antisyphilitic treatment with relief, and in whom we were able to arrive at a conclusive diagnosis through the use of the ordinary methods of physical diagnosis assisted by the laboratory and the x-ray; second, to sound a warning to all, that any case giving a chain of symptoms suggesting gastric ulcer, cholecystitis, or gastric cancer, should never be considered surgical until syphilis has been ruled out as a cause.

Until three or four years ago syphilis of the stomach was considered more or less a medical curiosity; now it offers an alluring, difficult, and yet wholly satisfying, problem in the diagnosis of diseases of the gastro-intestinal tract. Barker, in *MONOGRAPHIC MEDICINE* states, "Syphilis of the stomach is very rare in adults, though it may cause ulcer or gummatous infiltration."

The apparent rarity of the disease has, I believe, been due to the fact that the symptomatology and clinical findings of the condition have not been put on a sound diagnostic basis and, therefore, the disease has not been described in text books. Mistakes resulting from these difficulties are excusable, but it is possible that many cases of syphilis of the stomach have been either operated upon or allowed to go on into a hopeless condition because of insufficient study and consideration in an attempt to reach a pathological conclusion.

The symptoms of gastric syphilis have been described by some authors as follows: Pain, tenderness over the epigastric region, at times nausea and vomiting, and occasionally emaciation.

In this series of five cases, all of whom were seen during 1920, four were white and one colored, three were male and two female. The ages were 25, 31, 34, 45 and 57 years.

CHIEF COMPLAINT: Four complained of pain in the pit of the stomach and on the right side; one had nausea without vomiting; one complained of vomiting and said he had vomited blood several times (this patient also suffered from marked weakness, while the others felt well except for their gastric symptoms); all of them had burning in the stomach when they went without food; four were relieved of the burning by taking either food or soda, this relief lasting only for one or two hours; all had dyspnoea on exertion; two were disturbed frequently by accumulations of gas on the stomach and intestines; three had lost from 20 to 35 pounds of weight in less than a year's

*Read before the Tri-State Medical Association of the Carolinas and Virginia, at Spartanburg, S. C., February 16-17, 1921.

time; one had gained in weight; one had had jaundice within two months prior to our seeing him; all had been somewhat nervous for several months, but the nervousness was not extreme and the only thing that disturbed their sleep was either pain or nausea.

PAST HISTORY: All of these cases had had the usual diseases of childhood without complications; one had had his appendix removed six months before we saw him. He stated that his symptoms had not been relieved by this operation.

SOCIAL HISTORY: Two of the men denied venereal infection; one said he had chancre at the age of 18. The wives of all three men had healthy children. Each of the women gave normal menstrual and child bearing histories, each having four children and one had had one miscarriage.

FAMILY HISTORY: Unimportant.

PHYSICAL EXAMINATIONS.

General Appearance: Three showed evidences of loss of body flesh; two were very pale and slightly jaundiced; all were normally developed.

Nose: One case had severe hypertrophic rhinitis.

Throat: One had badly diseased tonsils and there were white ulcerations on the pharynx and in the roof of the mouth which looked like mucous patches.

Mouth: Three cases had extensive pyorrhea alveolaris and carious teeth.

Glandular System: One had palpably enlarged glands in the cervical, occipital and inguinal regions.

Cardio-Vascular: There were no organic lesions. The blood pressures were as follows:

Age	25	140/90
"	31	130/80
"	34	134/75
"	45	135/85
"	57	160/100

Respiratory System: All were normal except one who showed several small areas of consolidation at both bases—suspected to be syphilitic.

Abdomen: All cases were tender over the right upper quadrant and over the epigastric region. A small irregular movable mass could be felt in the region of the pylorus, in two of the cases.

Nervous System: No gross abnormal signs or symptoms.

Genitalia: No abnormalities having any bearing on these cases.

X-ray Reports: I am indebted to Dr. S. B. Whitlock for the x-ray work done on this series of cases.

By Fluoroscope: All cases showed the stomach to be normally placed except one in which there was considerable gastropnoia. Two cases showed marked enlargement of the stomach and all of them showed a constant rugged appearance on both curvatures near the pylorus; this condition was most marked on the greater curvature.

These defects in the stomach were of greater extent and more pronounced than those found in gastric ulcer cases, yet they were not at all typical of malignancy. In three instances, there was a normal duodenal cap and, in two, there was no cap formed.

By Roentgenography: The fluoroscopic findings were confirmed. The emptying time in all cases was within six hours and in two cases it was less than four and a half hours. The intestines, in all cases, showed nothing abnormal.

LABORATORY REPORTS.

Urine: There were evidences of a mild nephritis in one case. The renal function was within the normal limit in all cases.

Blood: There was a mild secondary anemia in three of the cases, the lowest hemoglobin being 50% and the lowest erythrocyte count being 3,590,000. In two instances, the lymphocytes were slightly increased at the expense of the polymorphonuclears. There was a leucopenia in two cases, the other leucocyte counts being within normal limits.

Blood Wassermanns: Were all four plus by acetone insoluble and cholesterinized antigens.

In each of these cases I felt justified in making a diagnosis of syphilis of the stomach and antisyphilitic treatment was begun.

Three of the cases have been under treatment for more than eight months and, so far as their gastric symptoms are concerned, they are cured. Wassermanns made on these cases recently were negative. The other two cases have only received treatment for several weeks but both state that, following the third arsenobenzol injection, their stomach symptoms had begun to disappear.

After studying this series of cases and after reviewing a great deal of the literature on the

subject, I have concluded that there is no definite clear cut chain of symptoms and no conclusive clinical findings upon which we are justified in arriving at a real diagnosis, but that the diagnosis of such conditions can only be made by careful exclusion of other possibilities, the accomplishment of which can only be reached by the recording of a complete history and the doing of a thorough physical examination, these two methods being aided by the x-ray findings and by the laboratory reports.

Sarah Leigh Clinic.

GASTRO-ENTEROPTOSIS.*

By MATT. OTEY BURKE, M. D., Richmond, Va.

Is this a disease or merely a mechanical condition? That it can lead to a diseased condition can hardly be denied; that it aggravates any co-existing disease of the pleural or abdominal cavities is practically certain.

EMBRYOLOGY.

The primitive intestine is originally a straight tube formed by the infolding of the hypoblast and is divided into three parts: "the fore-gut, mid-gut, and hind-gut. From the fore-gut the pharynx, the oesophagus, the stomach and two-thirds of the duodenum; "from the hind-gut the rectum, sigmoid, descending colon and splenic end of the colon are developed. The rest of the intestine is developed from the mid-gut."

"The changes that take place in the fore-gut are as follows; the middle part becomes dilated to form the stomach and undergoes a rotation to the right, so that the posterior border, by which it is attached to the vertebral column by a mesentery, is now directed to the left and the anterior border to the right. At this time it is straight, but it soon undergoes a lateral curve or bend to the right at its upper end. It thus assumes an oblique direction, and the left border, originally the attached border, becomes inferior and forms the great curvature. The mesentery by which it was attached becomes the great omentum. The part of the fore-gut below the stomach forms the duodenum.

"The hind-gut is also a closed tube and from it are developed the rectum, sigmoid and lower part of the colon.

"The mid-gut is at first an open cavity, free-

ly communicating with the umbilical vesicle. As the body walls grow, this communication contracts very materially, though it still exists to a certain extent, and its open cavity becomes converted into a straight tube, still open where it communicates with the umbilical vesicle.

"This tube grows rapidly in length, and presents a primitive curve or loop downward and forward and, in consequence of its growth exceeding that of the walls of the body cavity, a portion of the loop protrudes into the stalk of the umbilical vesicle. At a subsequent period, however, the walls of the abdomen grow more rapidly than the intestine, which again recedes into the body cavity.

"At a short distance below the most prominent point of this loop a diverticulum arises, which marks the separation between the large and small intestine. The lower part of this diverticulum forms the vermiform appendix; the proximal part, by its continuous growth, constitutes the caecum.

"After this the anterior or upper part of the gut, corresponding to the small intestine, rapidly increases in length and about the eighth week becomes convoluted. The lower or posterior part, corresponding to the large intestine, is at first less in caliber than the upper part, and lies wholly to the left side of the convolutions of the small intestine; but later on the curve of the large intestine begins to form, and the first part, the ascending colon, slowly crosses over to the right side, first lying in the middle line just below the liver. It is not until the sixth month that the caecum descends into the right iliac fossa, and so drags the ascending colon into its normal position in the right flank."

SUPPORTS OF THE STOMACH.—The lesser omentum, from the transverse fissure of the liver to the lesser curvature of the stomach; the gastro-phrenic ligament, from the diaphragm to the cardiac end of the stomach; the gastro-splenic omentum. Behind the stomach is the caeliac axis also the solar plexus; branches from both help to support the stomach.

DUODENUM.—The ascending portion is freely movable; the descending portion is firmly fixed by the head of the pancreas on the left and the peritoneum in front.

SMALL INTESTINE.—The small intestines are held in place by the mesentery which is con-

*Read at the meeting of the Tri-State Medical Association of the Carolinas and Virginia, at Spartanburg, S. C., February 16 and 17, 1921.

nected to the middle of the cylinder of the small intestine and connects the convolutions with the posterior wall of the abdomen. Its root is about six inches long, and extends from the left side of the second lumbar vertebra to the right sacro-iliac symphysis.

LARGE INTESTINE.—Ascending mesocolon, descending mesocolon, costo-colic ligament, hepato-colic ligament and the transverse mesocolon. The most firmly fixed parts of the gastro-intestinal tract are the cardiac end of the stomach, the descending portion of the duodenum and the splenic angle of the colon.

OTHER SUPPORTS.—The abdominal muscles in front, the spinal column behind and the diaphragm above, which is connected by the pericardium to the cervical fascia.

ETIOLOGY.

1. Defects of rotation and development.
2. Weakened musculature.
3. Rapid loss of flesh and general weakness.
4. Frequent pregnancies.
5. Attitude.

MECHANICAL EFFECTS OF PTOSIS.—Ptosis of the stomach produces a stretching and narrowing of the pyloric end; the pyloro-duodenal angle becomes more acute; the ascending portion of the duodenum may be so pulled down that it makes an acute angle; pressure on the common duct; a strain on the nerves and caeliac axis; pressure on the pancreas; lowering of the great omentum; more or less strain on all of the ligaments and mesenteries; strain on the diaphragm and through the diaphragm on the cervical fascia.

Ptosis of the small intestines produces a strain on the mesentery and back, pressure on the bladder and pelvic organs.

Ptosis of the colon produces a strain on the hepato-colic ligament, right and left mesenteries, costo-colic ligament and pressure on the bladder and pelvic organs.

GENERAL EFFECTS OF PTOSIS.—Many people have congenital ptosis and so long as the general nutrition and strength are maintained no inconvenience is felt, but, when the body becomes weakened and emaciated, the ptosis becomes exaggerated, the angles become more acute, stasis is produced, toxins are absorbed, increasing the weakness, producing further sagging, adding to the already existing irrita-

tion. Ptosis of the stomach does not necessarily mean stasis so long as the pyloric outlet is natural and the musculature is normal. Let such an individual become run down by disease or a sedentary life and continue to overload the stomach; what happens? Peristalsis is decreased; the extra weight causes further sagging, the duodeno-pyloric angle becomes more acute; possibly enough pressure is produced to impede the vascular supply and to irritate the pneumogastric and sympathetic nerves; either increasing or decreasing the HCl with fermentation or decomposition of the stomach contents, the formation of gases, foreign acids, etc.

Ptosis of the small intestine may cause backache by pulling on its mesentery when the gut has an extra amount of work thrown on it by the stomach emptying its over load of fermented or decomposed products; or the terminal ileum may be too weak to propel the contents through the ascending colon. Ptosis of the transverse colon nearly always accompanies ptosis of the stomach on account of the weight from above and lack of support by the great omentum. The angles do not sag so much as the middle portion. Sagging of the transverse colon means an up-hill journey to the splenic flexure, which means an increased force on the part of the musculature; the increased resistance and decreased force necessarily result in more or less stagnation. Stagnation in the terminal ileum and transverse colon are always accompanied by absorption of toxins.

SYMPTOMS.

1. Attitude.
2. Gastric and intestinal stasis.
3. Pain in the abdomen and back.
4. Neurasthenia.
5. Sulcus between costal margin and umbilicus.

"The attitude is that of physical weakness. The individual is round shouldered and flat chested, standing with the head drooping and arms hanging in front of the center of gravity of the trunk. The waist line is high, the lower abdomen protuberant, giving in uncorseted women not infrequently the appearance of pregnancy.

"The costo-vertebral angle is more acute than normal. The lumbar curve of the spine is usually obliterated, giving rise to the straight

back, although occasionally the lumbar curve is exaggerated to the point of lordosis. The muscular development is below par and the patient is usually thin and anemic.

"Closer observation shows that the abdominal cavity is narrower above than below, because of the flattened chest and straight spine."

While the attitude does predispose to ptosis, congenital ptosis or acquired ptosis is a very potent factor in producing the ptotic attitude in the growing child.

DIAGNOSIS.

The ptotic attitude, epigastric sulcus, prominent hypogastric and ileac regions, gastric and colonic tympany below the umbilicus, are pretty strong evidence of ptosis.

The X-ray is conclusive and should always be used if possible.

TREATMENT.

So much can be done for these patients and so much can be said about each method of treatment, that I shall simply give an outline, reserving the treatment for a future paper.

The treatment may be considered under three divisions;

1. Medical (hygienic, dietetic and cales-
thenic.)
2. Mechanical.
3. Surgical.

MEDICAL.—Simple laxatives and general tonics in way of drugs, remembering to give as little medicine as possible.

HYGIENIC.—Cold showers on rising, unless contraindicated; sunshine and fresh air; freedom from worries as far as possible.

DIETETIC.—A laxative diet, especially green vegetables, fruits, nuts, honey and bran; four or five meals per day, avoiding heavy meals at any time. Rest after meals, raising and massaging the stomach with the hands one or two hours after meals.

CALESTHENICS.—Martin has given eight exercises especially useful in overcoming constipation and in strengthening the abdominal muscles.

MECHANICAL.—Adhesive plaster, corsets and abdominal supports or bandages. All supports should be applied with the patient in the

Trendelenburg position. Corsets should fit tightly at the bottom, moderately tightly in the middle, and loosely at the top.

SURGICAL.—Many operations have been devised for ptosis; some have proven a success and others a failure.

It would be a great economical factor if the public schools could adopt a system of examinations for ptosis, requiring each child to be examined every two years, and prescribing the proper attitude, exercise and diet. The diet could not be enforced but the attitude and exercise could be carried out to a considerable extent at the school.

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204 East Franklin Street.

Public Health

In The Tuberculosis Field.

HISTORY OF TUBERCULOSIS MORTALITY.

With the course of tuberculosis mortality for the sixty-year period from 1858 to 1918 as a background, some highly interesting figures are presented by the Statistical office, Field Investigations, United States Public Health Service. Taking Massachusetts figures as typical of the great majority of registration States during the past twenty years, the annual rates are plotted on a logarithmic scale, starting with the year 1858, with a rate of 400 deaths per 100,000 population from pulmonary tuberculosis. From 1885 to 1915 the rate of decline is shown to be fairly constant, recorded in a straight line on the chart from a rate of 300 to a rate of less than 120. In 1915 a rise occurred and this was followed by a further quite marked increase in 1918, clearly a departure from the course of pulmonary tuberculosis mortality during the preceding thirty years. On the heels of the marked increase of 1916-1918 followed a marked decline in the death rate for 1919-1920. English observers see a real decline in the destructiveness of tuberculosis, as a result of their study of comparative rates.

Twenty-four registration States of the

United States reported in 1914 a mortality rate of 123; in 1918 a rate of 130, and in 1919 a rate of 109. Figures for England and Wales showed a rate of 105 in 1914; in 1918 a rate of 134, and in 1919 a rate of 102.

Closer scrutiny of the reports in the United States for the period 1913-1920, taking the New York State figures as typical, bring more light on the situation with respect to the influenza epidemic. It was found that the seasonal curve for each year was quite uniform during the period 1913-1917, but that in 1918, 1919 and 1920 it presented irregularities. It was clearly shown that in the months in which influenza was epidemic the tuberculosis death rate rose to abnormal proportions, and the same phenomenon appeared in England and Wales. Yet, with the exception of the periods of influenza epidemic, the rate for every month was lower in 1918 than in 1917 or previous years.

It is concluded: (1) That the steady decline prior to the war was interrupted by a widespread, definite rise through 1918, followed by marked decline in 1919 and 1920; (2) the high rate for 1918 was apparently due entirely to the two waves of influenza epidemic and the rate for 1920 was probably somewhat increased by the 1920 epidemic influenza wave; (3) discounting the effect of the influenza epidemic, the existence of an unusual wave of mortality from pulmonary tuberculosis is still clearly shown, beginning in 1916, reaching its crest in 1917 and declining in 1918, 1919 and 1920.

Commenting on the course of tuberculosis mortality in England and Wales (report of Registrar-General, *British Medical Journal*, February 5, 1921, page 202) Stevenson writes that the recent trend of tuberculosis mortality can only be profitably studied by disentangling it from the mortality caused among the tuberculosis population by influenza. When this is done, he considers that the figures show tuberculosis mortality reached a maximum in 1917, and that a decline set in during the last year of the war and developed to a remarkable extent during the first year of peace.

"If," he says, "influenza increased the death rate . . . by killing off tuberculosis patients who would otherwise have died a little later, the great fall which has occurred since the epidemic came to an end may be in part attributable to this earlier removal of persons who would otherwise have died in the quarters of low mortality."

He does not, however, consider that this is a serious source of error. There is no evidence that mortality from the non-pulmonary forms of the disease was increased by the epidemic; these non-pulmonary rates were very low in 1919, and this is thought to point to a real decline in the destructiveness of tuberculosis.

The State Board of Health has accepted the resignation of Dr. Walter C. Klotz, medical superintendent of Blue Ridge Sanatorium, Charlottesville, Va. Dr. Klotz resigned to take the medical directorship of the National Sanatorium at Johnson City, Tenn.

B. L. T.

Proceedings of Societies

The Nelson County Medical and Surgical Society

Met in regular session at Lovingsston, May 23, the following members being present: Drs. J. C. Everett, D. C. Wills, F. M. Horsley, W. M. Tunstall, J. B. McKee, J. B. Woodson, and H. S. Dickie. Drs. J. B. Woodson and J. B. McKee were elected new members.

The following resolutions were adopted:

1st. Resolved, that the members of the Nelson County Medical and Surgical Society are opposed to the removal of the Medical Department or any other department of the University of Virginia to Richmond or to any other place, now or at any other time. That the members of this society vote for and support only those candidates at the primary election to be held August 2, 1921, for the Virginia House of Delegates, who will cordially vote for and advocate this resolution.

2nd. Resolved, that owing to the scarcity of trained nurses, especially in rural sections of Virginia, the delegate from this Society to the Medical Society of Virginia, at its next annual meeting, be, and he is hereby instructed to advocate some plan whereby this shortage of nurses, so detrimental to the physician in his work and to his patients may be corrected.

J. F. THAXTON, Secretary.

The man who is always leaving his job should consider the postage stamp; it sticks to one thing till it gets there!—Selected.

The Augusta County (Va.) Medical Association, Inc.,

Held its annual meeting in Staunton, August 3, Dr. H. M. Wallace, of Fishersville, presiding. Business of importance to both city and county doctors was discussed and Dr. C. P. Obenschain, of New Hope, was elected to membership. Papers were read by Drs. H. Welland, of Canton, O., and Drs. F. J. Fulton and M. J. Payne, of Staunton. These were all freely discussed.

New officers elected for the ensuing year are: President, Dr. W. S. Whitmore, Staunton; vice-presidents, Drs. John Freed, Staunton; R. S. Griffith, Basic City, and T. M. Parkins, Staunton; secretary, Dr. J. F. Fulton, Staunton; treasurer, Dr. A. F. Robertson (re-elected), Staunton; and censor, Dr. Geo. H. Thomas, Staunton.

Secretary's Announcement

Build Up Our Library.

Use of our Circulating Library continues to increase. Several members of the Society are on a waiting list for some of the books. A very large number of those who have borrowed books send in additional requests along with the books they are returning. Our library should be so well supplied with the new books that the needs of members of the society could be met promptly. An interesting feature in connection with the library is the renewal of interest in the society's affairs taken by members who are using these resources of the organization.

What do you think of the establishment of a Circulating Library by the Society? Suggestions looking to its development and enlargement will be welcomed.

Exceptionally Good Risks.

During the past eight months physicians who have had their automobile insurance written in the Society's office have had all their losses paid with less than five per cent. of the amount paid for their insurance. On an annual basis this will cost about eight per cent. of the premiums demanded.

The average for the general public is only thirty-eight per cent. These figures show that physicians from an exceptionally good class as to risk. However, instead of getting a fair rate from the companies, they are penalized

in that they do not get the reduction allowed the general public for private use or where the car is owner-driven exclusively.

Our figures are based on a comparatively small number of risks. They are fortified, however, by a rather careful examination of the records in the city of Richmond with more than three hundred physicians using automobiles. Reducing all the rates and percentages to dollars and cents, the actual losses caused by physicians while driving automobiles could be covered by an annual cost of five dollars per annum for city physicians and about half that for those in small towns and rural districts.

The reason for this is quite clear. Physicians form an exceptionally intelligent class with the well trained mind's attitude towards the welfare of their fellow-men. In addition their life work is the protection and lengthening of human life, and they govern all their activities with this object in view. It is their business to protect life and they are regardful of it when driving automobiles.

Assuming that half the physicians in the United States carry liability protection, the failure of the companies to appreciate the facts as set forth here costs these men about one and a half million dollars annually more than it should.

We are confident that the arrangement under which we are now handling this business is the best obtainable at the present time. Physicians who place their insurance through the Society's office may feel reasonably confident of saving at least thirty per cent. of the cost of their policies.

Delinquent Members.

Continuous effort has been put forth to eliminate all arrearages from the books of the Society. At the present time ninety members are still in debt for assessments up to and including 1920. Twenty-six of these men owe four dollars each, twelve owe six dollars each, thirteen eight dollars each, and the remainder from ten to twenty dollars each. We regard all of these as collectible accounts and have no intention of relinquishing our moral and legal claims. As fast as we can locate the men in arrears, we ask for a settlement. The courteous and prompt attention given our letters by the members is greatly appreciated.

G. H. WINFREY,
Secretary-Treasurer.

The Truth About Medicine

During June the following articles have been accepted by the Council of Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

The Abbott Laboratories:

Saligenin.

Armour & Co.:

Suprarenalin Base.

Suprarenalin Ointment.

E. Bilhuber:

Santyl Capsules.

The Calco Chemical Co.:

Amidopyrine-Calco.

Hynson, Westcott & Dunning:

Tablets Mercurochrome 220—soluble.

H. A. Metz Laboratories:

Orthoform.

Winthrop Chemical Co.:

Mesotan.

Nonproprietary Articles:

Amidopyrine.

Book Announcements

Operative Surgery. By J. SHELTON HORSLEY, M. D., F. A. C. S., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. 721 pages, with 613 original illustrations. Illustrated by MISS HELEN LORRAINE. St. Louis: C. V. Mosby Company. 1921. 8vo. Cloth. Price \$10.00.

Dr. J. Shelton Horsley has recently given to the surgical world his volume "Operative Surgery," which only in the last month has been published and which we gladly welcome. The volume has over 700 pages and 613 illustrations, which are clear, definite, facile and do not have to be studied to understand the anatomical relationships of the intention of the operator.

Dr. Horsley's standards in surgery are well known. For three successive years he has been elected Chairman of the Council of Scientific Assembly of the A. M. A., which we take as an indisputable recognition of his merit. A certificate of merit in blood vessel work has likewise been given to Dr. Horsley by the American Medical Association, he receiving in Detroit two years ago a bronze medal for research work of unusual character. The Southern Medical Association likewise has recognized Dr. Horsley's contributions, in that they presented to him in November, 1916, a gold medal, the committee on presentation being Matas, Bloodgood and Crook. Such an honor has only been given once before, to Bass of New Orleans for his monumental achievement in growing artificially the malarial plasmodium.

Particular attention would be called in the consideration of his monograph to the first

sixty pages or so, which reviews the practice of surgery, the physio-pathological state of the living, and the essential application of the mechanical principles of surgery to the knowledge of biologic science. Dr. Horsley's classification of surgical drainage, of the character of drainage material, and his classical presentation of the more recent theories of shock and hemorrhage are most clear, instructive and readable. We would also like to point to the chapter embracing surgery of the blood vessels, ligation, transfusion and aneurism, as his many contributions to this literature and his work, both research and clinical, have put him in a peculiar point of vantage to pass authoritatively upon the worthiness of the different methods to be employed and the indications for their employment; we would wish that the size of the volume had not been limited, so that this particular feature could have been exhaustively considered at his hands. The illustrations and photographs of the work in plastic surgery of the face, hare-lip and cleft palate are particularly attractive, and Dr. Horsley's description of applied mechanical principles are well worth a thorough study. In chapter XXV a classical resume physiological, pathological and operative, is recorded about the stomach. Those of us who have witnessed Dr. Horsley's work know his strong advocacy of pyloroplasty plus excision of the ulcer bearing area; only in rare instances does he employ the posterior gastroenterostomy, stating that in addition to the advantages of pyloroplasty having a normal course for the gastric contents, excision of the ulcer, and bathed by the physiological acidity "the dangers of vicious circle, jejunal ulcer, volvulus or hernia into the lesser peritoneal cavity, though not great, exist when a gastroenterostomy is done and are not present after operations on the pylorus."

Many attractive features in the discussion of operations are found throughout the volume. The easy style of the writer would commend the book to all surgeons even if it did not possess the high type of scientific surgery which is found on every page. It may be that we are particularly interested in this book because we are Virginians and take a pride in all that has to do with our State, but we believe that the value and scientific merit of Dr. Horsley's "Operative Surgery" will speak for itself and commend its recognition to all surgeons.

ROBERT C. BRYAN.

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Editorial

Fecal Fat.

The pancreas has an external secretion and an internal secretion. The internal secretion, formed, it is thought, in the islands of Langerhans, passes through the lymphatics, thoracic duct and the blood stream, to the muscles where it performs the function of controlling the carbohydrate metabolism by processes not yet fully determined. The deprivation of the body of this internal pancreatic secretion is associated with the appearance of sugar in the urine. Allen's experiments in diabetes are interesting in dealing with this factor in the unsolved etiology of diabetes. But it is to the effect of external secretion upon the appearance of fat in the stools and its significance that we wish to direct attention at this time.

The pancreas furnishes the body with from 500 to 800 c.c. of pancreatic juice daily. The amount, of course, varies with the food and other conditions. A diet rich in carbohydrate excites a larger flow than a diet of protein. The presence of hydrochloric acid in the stomach chyme affects the amount; when increased, the discharge of pancreatic juice is greater; when absent or greatly diminished, the pancreatic juice is less in amount. Adrenalin and atropin administration decreases the secretion of pancreatic juice and high blood-pressure also appears to decrease it. This juice contains three ferments and digests all the forms of food taken by the human. The close relation of the infected common bile duct with the

pancreatic duct is the frequent cause of pancreatic disturbances.

Fecal fat is a clinical factor connected with pancreatic misfunctionation. While it was once believed that pancreatic juice was not essential to digestion, it is now generally accepted that it plays a most important role in proper digestion. Authors have reported experiments showing that there is a great diminution in absorption of nitrogen and fat (in dogs) when pancreatic juice is absent in the intestine. While some fat splitting goes on after excluding pancreatic juice from the intestines, fat absorption is interfered with through some as yet undetermined factor in pancreatic juice. As a result, cases of diminished pancreatic secretion, fat splitting and absorption, which should go on in the small intestines, show, unless aided by bacterial action in the large bowels, fecal fat.

Chronic disease of the pancreas, characterized by an interference with the flow of pancreatic juice, shows loose bowel movements. These stools are usually large and unformed. They are free from blood or mucus. They are not watery. In sprue one may find stools of the same character. The nature of the stools necessarily varies with the diet being taken by the patient. The color usually is clay or white and the oil and grease drops are easily observed. The absence of bile pigment should be determined by test. The association of free fat and meat fibers in the stool points to the pancreas. The quantity of fat in these stools is enormous; the stools, if allowed to stand, show butter or cream-like masses. In some cases reported, as much as 75 to 80% of the fat taken was excreted in the stools. The loss of fat in excess of 20% may lead to the thought that the obstruction is significant of a graver pathology than that of mere pancreatic insufficiency, such as pancreatitis and cancer of pancreas.

The composition of fecal fat is unsplit (neutral) fat, fatty acids and soaps. Usually 50% is fatty acid and 20 to 50% soap. In connection with the fat, the presence of undigested meat fibers in feces, has an interesting and significant bearing. Microscopic observation of fatty stools showing bits of muscle fiber may be taken to indicate the probable absence of pancreatic juice in the intestines. This is particularly true if the muscle fibers are numerous and found after the use of Schmidt diet.

In fatty stools due to pancreatic disease, the

microscopic presence of a large number of fibers of meat indicates the exclusion of pancreatic juice, while the mere fatty stools may mean obstruction of bile or sprue. This differential indication should be borne in mind.*

News Notes

Members of the Medical Society of Virginia and Others Who Desire to Attend!

It is not too early now, even if you do not intend to prepare and read a paper, to begin to think about coming to the annual meeting at Lynchburg, October 18th to 21st, inclusive.

Lynchburg, centrally located with good railways converging from all directions, is so easily accessible that those residing in any part of the state will find schedules to suit their convenience.

There will be some who would prefer to come by automobile and while there are now several good highways leading into our city, others are under construction and when October comes, with its usually ideal weather, the lure of the road should prove irresistible to the enthusiastic motorist.

The writer motored from Lynchburg to the Petersburg meeting last fall, over surprisingly good roads, following the route of the N. & W. Railway, going and returning via Richmond, Powhatan C. H., and Farmville. Every mile was a joy and the entire trip a splendid recreation.

Begin now to lay your plans. Bring the wife and daughters. There will be a hearty welcome awaiting you all.

GEO. J. TOMPKINS,
Chairman Local Committee
of Arrangements.

Lynchburg Meeting.

The cordial invitation extended in the above notice by Dr. Tompkins, in behalf of the Lynchburg profession, should be accepted by every member of the Medical Society of Virginia, unless personal or professional circumstances prevent. Titles for a number of interesting papers have already been sent in; others will follow. The subject selected for General Discussion is "Systemic Manifestations of Chronic Local Infections", which is to be discussed by Drs. F. H. Smith, Abingdon; F. J. Wright, Petersburg, and R. L. Payne, Norfolk, under the following

headings, respectively: General Considerations; Medical Treatment; Surgical Treatment.

Notices have been sent from the Society offices asking members for titles of papers. Please let us have these promptly so that you may be assigned your place on the program. Letters have also been sent to secretaries and presidents of the local societies requesting that delegates be appointed to represent the component societies at the Lynchburg meeting. Attention has further been called to the fact that councilors were to be nominated to represent the second, fourth, sixth and ninth districts. The Secretary-Treasurer, Mr. G. H. Winfrey, 104½ West Grace Street, Richmond, would be glad to have all of this information promptly.

Richmond Midwives to be Examined Before Receiving Licenses.

Reports show that more than 1,500 births in Richmond last year were attended by midwives and that the mortality record among these cases was unusually high. To overcome this state of affairs, the City Health Bureau, under the supervision of its chief health officer, Dr. C. C. Hudson, has inaugurated a plan to have all midwives receive a special course of instruction and pass examinations before receiving licenses. Beginning August 8, a series of lectures will be given for two weeks by prominent obstetricians and nurses of experience in this work. August 29 is the date which has been set for the beginning of examination of those practicing midwifery in Richmond. The board recently appointed by Dr. Levy, director of public welfare, to have charge of examinations is composed of Drs. A. E. Turman, M. Pierce Rucker, and Miss E. G. Friend, supervising nurse of the City Health Bureau. After August 29, only those midwives will be allowed to practice in this city, who have passed the required examination.

This is one of the most important measures which has recently been adopted by the Richmond Health Bureau, and it is believed it will result in the saving of a number of lives each year.

Health Officers Discuss Pellagra In The South.

A conference, presided over by Surgeon General Cumming, of the U. S. Public Health Service, was held in Washington, D. C., August 4 and 5, to discuss the incidence of pellagra in the South and to suggest plans for its prevention. This was attended by health officials

*Read Oxford Press on the subject.

from twelve Southern States, and representatives from the Red Cross and Department of Agriculture. Economic depression in Southern States, more especially in the cotton belt, is supposed to have produced an unfavorable effect upon diet, by causing an excessive reduction in animal foods and a too large use of cereals. It is thought by many that conditions are not such as to cause alarm and that there is an increase in pellagra in only about half of the Southern States, there being a decrease in other states. It is believed that co-ordination of all health agencies will assist in improving the situation.

Infantile Paralysis Reported in Virginia.

Two cases of infantile paralysis were recently reported in Rockingham County, Virginia. However, Dr. Howard Armstrong, the health officer of Harrisonburg, issued warning that all precautions should be taken to prevent a spread of the disease, and we have at this time heard of no further cases.

Carvacrol in Hookworm Treatment.

In a recent report to the U. S. Public Health Service, the possibility of using carvacrol as a substitute for thymol in hookworm disease is considered by A. E. Livingston of the Hygienic Laboratory. Thymol and oil of chenopodium are the best remedies known for treating hookworm cases. Thymol is costly and, being imported, our supply is uncertain. Oil of chenopodium is a variable substance but its cost is low and the supply abundant. These as well as all other vermifuges thus far used may produce serious toxic effects or fail to remove the parasites. Thus it is evident that a more satisfactory remedy is needed.

Hixson and McKee have recently devised a method by which carvacrol may be prepared from spruce turpentine, a by-product in the manufacture of wood pulp. The supply of carvacrol is thus assured, its cost would be low, it is a liquid at body temperature so that it would probably come in close contact with the intestinal wall and it is an isomer of thymol and possibly has a similar action on intestinal parasites. With these facts in mind, experiments were made on rabbits, earthworms, and paramecia for the purpose of finding the relative toxicity of thymol and carvacrol.

The results show that these two drugs have practically the same toxicity on the animals used and, on the basis of these experiments, it

is recommended that a careful clinical trial be made in hookworm cases where conditions can be carefully controlled.

General Hospitals To Take in T. B. Patients.

The opening of wards in general hospitals for tuberculous patients, as recommended by the American Medical Association at its recent annual meeting in Boston, will, it is believed by the U. S. Public Health Service, be of enormous benefit not only to most of the two million known victims of the disease in the United States but also to thousands of others in whom the disease is incipient and easily suppressible, if promptly treated. The resolution was prepared and recommended by the National Tuberculosis Association in 1916.

Such an arrangement, it is argued, should financially aid the smaller hospitals, especially; should enable patients in moderate circumstances to obtain preliminary treatment in their home towns instead of having to go without or to resorts; would prove educational to the patient's family; and would assist in familiarizing the family physician with the treatment, thus aiding him in the earlier diagnosis of cases and later home treatment of his patient and other members of the family.

Dr. Charles E. Conrad,

Of Harrisonburg, Va., is taking a six months' post-graduate work at the Babies' Hospital, New York City. He will return home about January 1, 1922, and will confine his work to Pediatrics.

Dr. R. Rush Goad,

Who has for sometime been located at Dug Spur, Va., has now moved to Hillsville, Va., where he will continue the practice of his profession.

Dr. J. T. Green,

Recently of Rose Hill, Va., has located at Coeburn, Va.

Dr. and Mrs. A. H. Deekens,

Who have been living on Forst Hill Avenue, this city, since his return from service in the Army, have moved their residence to The Darlington, 315 North Boulevard, this city. Dr. Deekens' offices are at 108 North Ninth Street.

Norfolk County Aiding in T. B. Work.

Upon request of Dr. Charles R. Grandy, who is in charge of the Norfolk City Tuberculosis Clinic, Norfolk County has made an appropri-

ation of \$100 toward the work of this institution.

U. S. Training School for Nurses.

A training school for nurses of the U. S. Public Health Service is to be established by the Surgeon General. This will offer women desiring to take up the profession of nursing a course of study leading to a diploma and an opportunity to assist in caring for disabled military patients. Headquarters of the school is in the office of the Surgeon General, Washington, D. C. Training will be given in certain hospitals in the Service. Schools will open on September 1 at Fort McHenry in Baltimore and at Fox Hills, Staten Island, N. Y. The Service hospitals provide experience in all branches of nursing, affiliations being made with civilian hospitals for some subjects.

Candidates should make application in person or writing, to the Surgeon General, U. S. Public Health Service, Washington, D. C. Special consideration will be given to candidates who have taken the course in Elementary Hygiene and Home Care of the Sick with the Red Cross, or who served as nurses and aides in army or civilian hospitals throughout the war. Candidates must be between 21 and 35 years of age, must pass satisfactory physical examination, and must be graduates of a recognized high school or present evidence of an educational equivalent. The course will be three years. Credit will be made for certain qualifications.

No tuition fee will be required. A monthly allowance to meet necessary expenses will be made.

Bi-Weekly Reports on National Health Legislation.

Bi-weekly summaries of national legislation concerning public health have been issued by the National Health Council since last March, when Congress convened in special session. These summaries list and abstract all new health legislation and also report progress on bills previously outlined. The first eight statements, covering the period from March 4th to July 7th, 1921, have listed about 80 bills, dealing with some phase of public health. Forty-four of these have been discussed at length and their progress carefully followed.

The reports, which are mimeographed and average about twelve pages, were intended primarily for members of the Council. The de-

mand for them from non-members has been so great, however, that arrangements have been made to distribute copies at 20 cents a piece, which about covers the cost of production. Since it is problematical how long the special session of Congress will last, no definite subscription price can be set for the term. With the opening of the regular session of Congress in December, it is hoped that these reports can be printed, instead of mimeographed, and a subscription price set. These legislative summaries can be secured by addressing the National Health Council, 411 Eighteenth Street, N. W., Washington, D. C. A limited supply of back numbers, covering the current session of Congress, is also available.

Dr. John H. Baird,

Who until recently has been associated with Dr. C. C. Coleman of this city in the practice of neurological surgery, has entered the U. S. Public Health Service as passed assistant surgeon with the rank of captain. He has been assigned to duty at Fox Hills, Staten Island, N. Y. Dr. Baird was recently elected by Yale University as professor of neurological surgery in their college in China, but at his request he will not be called to enter upon his duties there for another year.

Dr. James G. Lyerly,

Of the 1920 class of the Medical College of Virginia, and who has just completed an internship at Memorial Hospital, this city, has succeeded Dr. Baird as assistant to Dr. C. C. Coleman, of this city.

Senate Passes Sheppard-Towner Bill.

This bill, providing for the protection of maternity and infancy through the cooperation of Federal and State governments, was passed by the U. S. Senate on July 22 and sent to the House. The initial appropriation, \$1,480,000, is to be allotted to the various states in accordance with the amount appropriated by the individual state.

Dr. R. Finley Gayle,

Who is connected with Tucker Sanatorium, this city, has returned to his work here after spending several weeks in New York City, where he did post-graduate work in nervous diseases at Columbia University.

The Section of Neurology and Psychiatry, Southern Medical Association

Has arranged a most instructive program for

the meeting at Hot Springs, Ark., next November. An exhibit of specimens and charts is being collected; those who wish to send specimens should communicate with Dr. Paul V. Anderson, Westbrook Sanatorium, Richmond, Va., who is secretary of this new section and is arranging the exhibit. Those who wish to take part in the discussion of the papers should write Dr. Tom A. Williams, 1746 K Street, Washington, D. C., chairman of this section.

The Medical Library Association.

Dr. John Ruhrah, secretary of the association, gives us its following interesting history:

This is a national association, including most of the larger medical libraries and many of the smaller ones, as well as a large number of individual members who are recruited from those of the profession or laymen who are interested in medical libraries, and medical literature.

The Association was founded in 1898 by Dr. George M. Gould, its first president, in connection with Sir William Osler. The object of the Association is the fostering of medical libraries, and maintenance of a system of exchange of medical literature among them. Any medical society, association, university or college, having a fixed home, and a library of at least 500 volumes, with a librarian or other attendant in charge, is eligible for membership. The libraries pay \$10.00 a year dues, and may be represented at the annual meeting by two persons. The individual members pay \$5.00 per year.

The Association has resulted in uniting those interested in a betterment of conditions in medical libraries. The annual meetings have afforded opportunities for interchange of opinions on topics relating to medical library work, the end in view being the placing of the up to date tools, that is the medical books and journals, in the hands of the profession. These meetings have been held in various places and have afforded librarians an opportunity to inspect the various libraries, both medical and otherwise. The Association maintains an exchange, which is a sort of clearing house through which books and journals are sent from one library to another.

Headquarters of the Association are at 1211 Cathedral Street, Baltimore, Md. They will be pleased to have applications for individual or library membership, or contributions of books, reprints or funds to carry on the work.

Dr. Hunter Holmes McGuire,

Who has been serving an internship at Johns Hopkins Hospital, Baltimore, since graduation from the University of Virginia Medical School, last year, has returned to this city and will be associated with his father, Dr. Edward McGuire, in the practice of his profession.

Married—

Dr. John H. Baird, recently of Richmond, but now with the U. S. Public Health Service, and Miss Emily Elizabeth Richmond, of Gate City, Va., early in July.

Dr. Everett Russell Ferguson, Toms Creek, Va., and Miss Amelia Brizzie, Chattanooga, Tenn., June 22.

The American Red Cross

Will hold a national convention in Columbus, Ohio, October 3 to 8, inclusive. Thousands of delegates are expected to be in attendance for consideration of all phases of the permanent program.

Sterilization Law Declared Unconstitutional.

We note from *Eugenical News* that a decision of the Supreme Court of Indiana has declared the sterilization law of the state unconstitutional. The principal point taken is that the statutes do not give the person concerned a hearing before a judicial body where he may present his side of the case and evidence. The question was also raised as to sterilization being an extra punishment not ordered by a court.

Healthmobile.

According to the *Journal of the P. I. Medical Association*, the Philippine Health Service, in connection with its health propaganda, has fitted out a truck containing motion picture equipment for both in-door and out-door exhibitions, as well as dispensary supplies for holding traveling clinics.

Dr. A. G. Brown, Jr.,

Editor of this journal, is home again after a hurried trip abroad, having been called to Carlsbad to attend a patient who had been under his care and whom he accompanied home.

Dr. S. D. Hatfield,

Until recently of Iaeger, W. Va., we are informed has moved to Kokomo, Ind., where he will specialize in pediatrics.

The American Electrotherapeutic Association

Will hold its annual meeting in Washington,

D. C., September 7-10, under the presidency of Dr. Byron S. Price, of New York City. In addition to the reading of papers, practical demonstrations will be given each day in the use of equipment to secure certain definite therapeutic results. Dr. A. Bern Hirsh, of New York, is secretary of this association.

Dr. and Mrs. H. S. Belt,

Of South Boston, Va., have been recent visitors at Buffalo Lithia Springs, Va.

Dr. John D. Foltz

And family have returned to their home in this city after a visit to relatives in Lexington and Harrisonburg, Va.

Dr. and Mrs. Hugh McGuire,

Alexandria, Va., have returned home after a visit to relatives in this city. Later, they will spend some time in the North.

Work to Begin on Tokyo Hospital.

This autumn, work will be started on buildings for St. Luke's International Hospital, Tokyo, which was established and has been maintained for many years by the Protestant Episcopal Church of the United States.

Dr. W. Lowndes Peple

And family have returned to their home in Richmond after a vacation spent at Nimrod Hall, Va.

Big Chemical Exposition to be in New York.

The Seventh National Exposition of Chemical Industries will be held at the Eighth Coast Artillery Armory, in New York City, September 12-17. This event promises to be the greatest market place for chemical products and machinery since industry was established. Scientists from all parts of the world will meet there. Four hundred exhibitors have taken space. Information about the Exposition may be obtained of the management at 342 Madison Avenue, New York City.

Roanoke Doctors At Mountain Lake.

Drs. Alvah Stone and W. R. Whitman, of Roanoke, Va., have been recent visitors at Mountain Lake, Va.

Dr. William F. Drewry,

Of Petersburg, Va., has been selected chairman of the auxiliary committee to be formed in that city, in the interest of the Virginia historical pageant.

\$1,000 Fee The Limit.

A policy has recently been adopted by the Johns Hopkins Medical School, forbidding a larger charge than \$1,000 for professional services in any case treated at its hospital.

Dr. F. M. Perrow

Has returned to his home in Lynchburg, Va., after a fishing trip to Craig county.

Dr. A. F. Bagby,

Of this city, has moved his offices from the Franklin to the Professional Building, at Fifth and Franklin Streets.

Dr. and Mrs. J. N. Upshur,

Richmond, are spending several weeks at Warm Springs, Va.

Dr. Guy R. Fisher,

Of New Hope, Va., was a recent visitor in Richmond.

Dr. and Mrs. I. K. Briggs,

Of South Boston, Va., in July, enjoyed a motor trip to Saranac Lake, N. Y.

Dates Announced For St. Louis Meeting.

Dates just announced for the St. Louis meeting of the American Medical Association are May 22-26, 1922. Dr. Robert E. Schlueter, St. Louis, has been appointed chairman of the Local Committee of Arrangements.

Dr. L. Duncan Bulkley,

Of New York City, has retired from the active practice of dermatology and will give his time to consultation practice and the treatment of cancer.

National Cancer Week

Is to be held from October 30 to November 5, 1921. When the whole country is interested in this subject, it should prove a most opportune time for some more definite action to be taken for the control of cancer in our State. The American Society for the Control of Cancer, 25 West 45th Street, New York City, will, upon request, furnish any information in its possession for organizing and carrying on this work.

Red Cross Nurses in U. S. Service.

The American Red Cross Nursing Service, in which 37,000 nurses are enrolled, is the official nursing reserve of the military establishments of the United States. It is announced that there are 257 Red Cross nurses still on duty

with the Army, 131 with the Navy, and 1,163 with the U. S. Public Health Service, largely in connection with the care of disabled veterans of the World War.

The W. Va. Stte Medical Association,

At its annual meeting in Charleston, elected Dr. George A. MacQueen, of Charleston, president; Dr. Robert A. Ashworth, of Moundsville, secretary; and Dr. Hugh G. Nicholson, of Charleston, treasurer. The 1922 meeting is to be held in Huntington.

Camp Lee Medical Supply Depot Destroyed By Fire.

Fire, believed to have been caused by an explosion of chemicals, on August 4 destroyed the medical supply depot at Camp Lee, Va., causing damage estimated by government officials at \$50,000. Four carloads of valuable medical supplies, and surgical instruments, consigned to leave the army base the following morning and valued at \$35,000, were a total loss.

Good Showing Made By Richmond Health Department.

The annual report of the Health Bureau of this city, recently issued, made a good showing as to the health of Richmond. The 1920 total death rate was the second lowest in the history of this city, being 16.46 per 1,000 population. The death rate, excluding non-residents, was 14.8 per 1,000. The death rate from consumption was 130.1 per 100,000 population, which was the lowest rate ever recorded here from this cause.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for medical interne at St. Elizabeths Hospital, Washington, applications to be rated as received until November 1, 1921; for trained nurse to fill vacancies in the Federal Board for Vocational Education and in the Indian Public Health Services; and for reconstruction assistant in (a) physiotherapy and (b) occupational therapy. Applications for these last named positions will be rated as received until further notice. All examinations are open to both men and women, though appointing officers have the legal right to specify the sex desired in requesting certification of eligibles.

Woman Congressman Opposes Sheppard-Towner Bill.

We understand that the only woman member of Congress, Miss Alice Robertson, of Oklahoma, is opposed to the Sheppard-Towner bill and she is appealing to the American women voters to use their influence to defeat it.

Wanted—Two assistant resident physicians for Catawba Sanatorium. This is a State institution for the treatment of pulmonary tuberculosis. Capacity, 300 beds. Forty-five hundred cases treated to date. Complete X-ray and laboratory equipment. Salary, \$100 to \$150 per month, with board and lodging. In replying, state experience, age, school, year graduated, married or single, and references. Address Dr. B. L. Taliaferro, Resident Physician, Catawba Sanatorium, Catawba Sanatorium Post Office, Roanoke County, Virginia. (Adv.)

Obituary Record.

Dr. V. C. Huff

Died at his home in Wytheville, Va., July 21, at the age of 87 years. He was born in Nelson County, Va., and moved to Wytheville in 1857. While in the service of the Confederate Army, he studied medicine and graduated from the Medical College of Virginia, Richmond, in 1865. Upon his return to Wytheville after the war, he practiced medicine until 1873, at which time he organized the Farmers' Bank of Southwest Virginia, and had since given his time to the success of that institution. He is survived by his widow and a son.

Maryland Virginia Griffith,

Son of Dr. R. S. Griffith, of Basic City, Va., was killed in France, while serving with the 116th infantry. His remains recently reached this country and the funeral services and burial were held near his old home on July 24. The services were most impressive and the large attendance of friends evidenced the esteem in which the young man was held.

Dr. Logan Lindsay Banner,

Castlewood, Va., died at his home in that place June 29, from general paresis. He was 63 years of age and a graduate in medicine from the College of Physicians and Surgeons, Baltimore, in 1884. He was a member of the U. S. Board of Medical Examiners for Pensions for a number of years.

Fifty-second Annual Session, Lynchburg, Va., October 18-21, 1921

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Original Communications

ARTERIAL HYPER- AND HYPO-TENSION.*

By J. W. PRESTON, M. D., Roanoke, Va.

Having assigned me so broad a subject as my contribution to this symposium, I conclude it to be your desire that I discuss only the more important features of the deviation of blood pressure from normal, and I shall, therefore, after a brief resume of our present knowledge of a few of the underlying principles, devote myself mainly to the practical considerations in the care of such cases.

Normal blood pressure is maintained by a functionally intact heart driving blood into normal vessels, the calibres of which are so regulated by a nerve mechanism as to maintain a proper, steady flow into the capillaries and thence into the tissues and cells. Blending and subtly diffusing into the controlling mechanism, the endocrine system also silently plays its part.

Touching this latter we feel certain that the secretion of the adrenal tends to raise pressure, that the pituitary and thyroid correlate with it, and finally that the gonads are important factors. Little known in this relation but gradually unfolding to us its functions is the autonomic nervous system, the chain linking together the glandular system here mentioned, and likewise functioning as the path traveled by the emotions and psychic influences from the brain centres, all of which have to do with the blood pressure.

In so far as we know, the point of pathology in pressure changes begins at the terminals of the arterioles. Whether these changes come as a result of poisonous products of a faulty metabolism, whether through an inherent and inherited weakness, through temperament, or finally through an overload of the machinery, presents an intricate problem.

*Read as part of the Symposium on Cardio-Vascular-Renal System, at the Southwestern Virginia Medical Society, Pulaski, May 11 and 12, 1921.

As to arteriosclerotic changes, it is probable that these are seldom, if ever, primary causes of increasing pressure, except as related to the kidney, but rather are coincident, resulting from the same source, or, like the enlarging heart, are compensatory.

The question as to why the pathological succeeds the physiological in the circulatory system of recent years, so much more frequently than in the past, has not been answered except in the vague way that we live faster, eat richer food and that the fight for existence is greater, and, to quote Moschowitz¹, those prone to hypertension "Burn up their energies swiftly, until at middle age they are exhausted, and the rest of their life is spent in seeking health."

As to the part borne by focal infection in relation to blood pressure disturbances, it must be admitted that even at this late day there is little definite. It is true that few people during their fourth and fifth decades, with abnormal rise of pressure, are free from some form of focal infection. It is certainly true that many have such infections with normal pressures. It is a beautiful theory that the absorption of split proteins from focal infections acting through the nerve control, or the vessel walls, may maintain first a vessel spasm and later produce permanent changes. This is a factor which cannot at present be ruled out. To say the least, while focal infections tend to maintain a lowered vitality, mistakes are often made in attempting their removal after a patient is badly weakened by organic changes in the vascular system.

Whatever the cause, it seems to be a fact that cardiovascular diseases are upon the increase and a close second to tuberculosis. A matter of interest is that we hear so much of the importance of early diagnosis of tuberculosis and so little of the importance of an early recognition of the disorder here under consideration. To diagnose the former requires much skill, time and patience. To diagnose the latter

is comparatively simple, after making due allowance for functional variations. May I not here stress the imperative need of greater vigilance in detecting and treating the earlier stages of hypertension?

It may indeed be unfortunate that a beginning deviation of blood pressure from normal does not carry with it the tell-tale symptoms of most diseases, for of all serious conditions this is perhaps the one found oftenest in a routine examination and in patients who are feeling themselves to be in excellent health. This applies more particularly to a beginning elevation of pressure.

Manifestly, a distinction should be drawn both in prognosis and treatment between such cases as have a nephritic or renal sclerotic basis, and such as have not; the latter falling under the head of the essential hypertensive cases. As a means of differentiation, the phenolphthalein test is most helpful, but I desire here to particularly call attention to the practical value of the observation that urines in the nephritic cases practically always run a fixed low specific gravity. This observation is not by any means new, but Mosenthal³ has recently emphasized it.

Another symptom of value in differentiation which deserves more consideration is that of more frequent night urination in the cases tending to kidney involvement, the damaged kidney being forced to work overtime to perform its function. The fact that albumen is not present in such cases means so very little that I personally am in doubt if it really be worth the trouble of looking for, it being so seldom present even in the cases in which the loss of kidney function is marked.

Having discovered a blood pressure ranging constantly above normal, what may be done? This again brings us back to the etiology and impresses the fact that the proper attitude to assume is that the condition is a symptom, which, like the smoke from a smouldering volcano, indicates what is going on beneath.

In the matter of treatment it is probable that educating a patient in regulating his habits of work and play, his diet and his general manner of living so as to best relieve strain and tension is the best service that can be rendered him. An imperative duty is not to unduly alarm such an individual.

All have noted the rapid decay of such individuals, often incident to enforced idleness,

which breeds introspection. Such an individual should probably not give up his work, but should so regulate it as to keep the expenditure of energy well within his strength. The housewife should be taught that her cares, worries, and domestic upsets are perhaps not so serious as she conceives them to be. The teaching of optimism nowhere better repays. Frequent holidays and the cultivation of a hobby is better than medicine.

Of the newer contributions to the therapy of hypertensive cases it is probable that the most important is that of Allen⁴, in which he points out that the chlorides and water are the two substances requiring, if ingested to an excess, a heightened blood pressure for elimination. Patients can be easily trained to use smaller quantities of salt on their food and likewise to properly regulate water intake.

Relative to dieting, it is certainly true that in our zeal we often overdo this matter and weaken our patients till their last state is worse than their first. It is likewise true, however, that many of these patients overeat and the majority who are inclined to overweight are benefited by a reduction in food and coincidentally their weight, both of which had perhaps best be accomplished by lowering the intake of fats and carbohydrates after the manner of reduction in a mild diabetes.

Confusing no doubt the matter of rising pressures with increase of blood urea in the nephritic cases, the impression has become fixed that proteins should be largely excluded from the diet of all cases of elevated pressure. Mosenthal² has rendered a service by showing that high protein diet does not raise blood pressure, and conversely a low one does not reduce it except through secondary anemia, so it is probable that we have gone too far in the way of taking away meat as an article of diet, especially in reduced cases.

It is self-evident that such patients should be most carefully protected against infection and placed in bed upon the advent of even a minor one, for all will agree that many breakdowns date from the onset of a common cold or pharyngitis. I have noted that for some reason breaks in compensation in high pressure cases are more prone to occur in the beginning of cool weather.

In a considerable proportion of cases, neurosthenic symptoms develop early, partly due, no doubt, to the disturbed sleep from which

so many suffer, and in such the sedatives, of which the bromides are least harmful, are indeed a boon. An hour's rest in the recumbent position after the midday meal and later breakfast in bed is most helpful.

Encouragement upon the part of the physician means much, and may well be classified as a part of psychotherapy, which properly employed benefits, as does also judicious massage in such cases as are not able to exercise.

Later, as the periodic breakdowns begin to come, from one to six weeks' rest in bed, exactly as in ordinary cardiac decompensation, accomplishes a great deal. Who has not seen the new lease of life given these cases by an enforced period of rest in bed, incident to a ruptured cerebral vessel, especially in such as have a minimum of kidney involvement?

Aside from such sedatives as bromide and chloral, and later opium in small doses, as above referred to, the one drug which I have found most universally helpful is digitalis in properly adjusted dosages. The old theory was that digitalis increased blood pressure, but anyone who will take the trouble to follow its administration with pressure readings will find that this is not true, except in such cases as have a falling pressure due to a failing circulation.

Barker⁵ well states that "Digitalis is not only of great value when the heart muscle has evidently begun to fag, but may be given in moderate dosage earlier with advantage."

As to further drug therapy, in such patients as are subject to headaches and whose elimination is poor, small doses of blue-mass twice weekly are certainly helpful. For such cases as present symptoms of edema, theocin or diuretin, given in a few successive doses, have a well earned place. Benzyl benzoate has been disappointing. I have personally seen but little benefit from the iodides. Judicious bleeding has its place in the plethoric but is a temporary expedient. The nitrites help in anginoid pains, but otherwise are probably of little value.

Time permits only a word as to subnormal pressures, and suffice it to say that in all such it is incumbent upon the practitioner to exclude all wasting infection, the most of which tend to lower the pressure through robbing the nervous and circulatory mechanism of their proper tone.

My observation is that an occasional case of low pressure results from the excessive use of tobacco, and my impression is that just as some cases of overwork and nerve strain result in high pressure, others, perhaps through exhaustion, show the reverse.

Of greater importance in this connection, perhaps, is the role played by the glands of internal secretion. In addition to the well-known symptoms resulting from disease of the suprarenal, the pituitary now comes in for a just share of attention, and, as recently summarized by Timme⁶, there is now a fairly well defined condition of asthenia, headache, and low pressure which is benefited by the administration of pituitrin.

In the above connection and bearing directly upon it, if I may be permitted to revert for a moment to hypertension, I would call your attention to what now seems a well defined elevation of pressure, coincident with the menopause, which in many cases is much benefited by the use of lutein substance. Commenting upon this, Hopkins⁷ draws the conclusion that it is a natural assumption to consider that a certain amount of depressor influence of the ovary is withdrawn from the adrenals, hypophysis and thyroid, leaving them, as it were, out of balance.

In conclusion, I wish to emphasize:

1. That the actual source of rising pressure is probably in the terminal arterioles, which may result from changes, functional or otherwise, in the nervous, metabolic, endocrine, or excretory systems, singly or combined.

2. It is of important prognostic value to determine whether hypertension in a given case has mainly a nephritic basis, or if the kidneys be comparatively healthful; in determining this, a careful following of the specific gravity of the urines is among the simplest and best tests.

3. It is not yet definitely known what relation focal infections bear to blood pressure disturbances.

4. That it is the duty of the profession to awaken to the importance of early diagnosis of rising blood pressures and to follow such cases with more care, with the hope of forestalling clinical symptoms and pathological changes.

5. That the endocrines should be carefully

studied in relation to both the hyper-tension and the hypo-tension cases.

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THE MANAGEMENT OF BROKEN COMPENSATION.*

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So much crowds upon one's thoughts when faced with the discussion of such a many-sided subject that one may be pardoned should he touch upon what another would omit, or the reverse. For instance, it seems best to discuss, first, my conception of the title "broken compensation." For, by inference, I may suggest the reason for some omissions. I shall say little of etiology, pathology and symptomatology, for example.

The heart, blood vessels and kidneys are so intimately reciprocal in function that they are really but one physiologic system. One link in this chain cannot be long affected and either of the others be immune. We think of the heart first when we speak of broken compensation; but there is always more or less failure of compensation in the kidneys. Sometimes one fails first, sometimes the other, and sometimes we do not know which is the primary offender and which but the innocent bystander or partner. And the ultimate fate of the arteriosclerotic, if he escapes arteriolar rupture, is by way of cardiac or renal decompensation. Therefore, our conception of the term broken compensation must be comprehensive enough to envisage the entire cardio-vascular-renal circuit.

Yet, the heart is the keystone of this arch, not only anatomically, but physiologically and pathologically. In the normal heart there resides an enormous amount of reserve energy which enables it for a term, measured at times

by years or decades, to overcome or compensate for grave handicaps in the system; whereas the opposite is the rule when the integrity of the heart itself is directly assailed. Hence, in the picture of broken compensation the heart is always in the foreground.

It is unfortunate that there clings in the minds of so many of us false notions, false conceptions of facts through the unthinking use of terms. I am thinking just now of the loose way in which we use the terms "functional" and "organic" heart disease. Thomas Lewis, of England, expresses the idea so forcibly: "It never has been shown, nor will be shown, that all instances of structural change in the heart are serious; it never has been shown, nor will be shown, that affections in which the heart is suspect, but which are accompanied by no evidence of structural disease, are of trivial import. Yet such is the almost universal and instant assumption as the affirmative or negative answer is given. On the one hand, one sees a patient with a scar on the pericardium or on the edge of the mitral valve, a healed scar which never had, and never will cause inconvenience, providing no medical man discovers in him the signs of it, and misinterprets its significance. The other side of the picture shows men who are genuinely distressed when they exert themselves in any way, but who, presenting no cardiac signs other than those of a supposed 'functional' condition, are dealt with casually or cavalierly."

Another writer has illustrated the same thought in this way: I cut my finger. This flesh wound constitutes a lesion. One of two results are to be expected. First, by reason of engrafted infection, a slowly healing wound results, cicatricial deformity occurs, joints become crippled, and the finger becomes injured permanently for the discharge of its proper function. If this crippling is progressive, progressive loss of function can be expected, until in time the finger becomes no good. This is disease. On the other hand, the wound may heal kindly, by primary intention, with a clean scar, without deformity or disability of function of the finger. The chances are that the injury will never impair the functional or anatomical integrity of the finger. The mere presence of an innocent scar is the only reminder that an injury ever occurred. Or we can go further with this hypothetical situation. The injury may have resulted in actual loss

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of substance. Some part of the bone may have been lost. And yet, when healing occurs, a soft, pliable scar remains, and the finger is as good as it was before. Surely this is not a diseased finger!

The point both are trying to convey is that a murmur does not always represent heart disease. Lewis, in fact, says that the medical profession would be much further on the road to an intelligent idea of heart disease if a murmur and alteration of heart sounds had never been discovered. Certain murmurs are of interest, only because their existence predicates an inflammatory or degenerative change in the myocardium.

We are brought to face the question: What, then, is heart disease? What is broken cardiac compensation?

The function of the heart is to pump blood. The myocardium is the structure which is essential to this function. The whole problem centers in the one question: Is there any factor which now does, or in the future will, compromise the myocardium in its one function?

I have already referred to the marvellous reserve power of the heart. It is the ability of the heart to mobilize its myocardial reserve that renders the normal individual the adaptable, many-gearred machine that he is. It is the same reserve power which is called upon when the heart is handicapped by damage in the circulatory system. How we wish we could measure this power and express it in figures! Suppose we could measure on a manometer that amount of energy necessary to carry on the ordinary functions of life, and give to it a value of 100; then measure the amount of energy which the same heart could exert under maximal urge, and give that a value of, say, 200. The difference between these two figures would represent the reserve power of the heart, as the difference between diastolic and systolic pressures represents the pulse pressure.

Because there is no such standard, all sorts of formulae and expedients have been devised, unsatisfactorily. But the lack is not so serious as it would seem. The evidence of diminishing reserve power is at hand for the one who will note it. The symptoms and signs of breaking or broken compensation are those which the normal individual experiences when he begins to encroach upon or to exhaust his reserve power in strenuous exercise. Overstrain of a normal heart gives rise to a series of phe-

nomena progressively disagreeable or dangerous as the limits of his reserve are approached. First, breathlessness; he breathes faster and in a labored fashion, with a sense of constriction about the chest. Then, weariness of the accessory muscles of respiration ensues. The face, flushed at first, becomes pale or dusky. He breaks into sweat. The heart pounds rapidly, but later the pulse becomes weak and irregular. Cough, with frothy or bloody expectoration, nausea, swollen limbs, etc., may represent extreme strain. These are just as truly steps in the progress of broken compensation. The difference is that in the one, strenuous exercise was needed to bring them out; in the other, progressively less exertion is required, until in the end the activities necessary to maintain bare existence become a burden.

Therefore, it follows that the test of efficiency or of inefficiency is the individual's tolerance for physical work. Broken compensation begins when the individual is unable to do without evidence of heart strain what he did formerly with comfort. Exhaustion, breathlessness and precordial pain are the earliest evidences.

The management of broken compensation should begin when it gives its first evidence; or, better still, before there is tangible evidence, if perchance we are able to detect the heart in which a myocardial break can be anticipated. Not that every actual or potential myocardial patient should be put upon drug treatment; the reverse is true. We should not resort to drugs until other means have proved unavailing or insufficient. At first the injunction, moderation in all things, accomplishes the desired result.

I think it very important that we recognize this first stage of broken compensation, because this is the hopeful stage. The promise of a relatively long life is at least as good as it is in the tuberculous case which will continue the "cure," or the diabetic who will live within his carbohydrate tolerance.

This is a home-grown American disease we are discussing. It seems that breakdown in this system is the penalty exacted for success, and invalidism and death at the most productive period of life finds its high-water mark here. We laugh at the manner of living of other peoples, but they live longer to laugh at us. So long as we continue to put success and the acquirement of riches above every other

desideratum, so long as we live the strenuous life of modern America, the annual toll from these degenerative diseases will continue unabated. The medical profession contributes its full quota to these untimely deaths. Chronic worry and harassment, irregular hours of rest and eating, are the doctor's lot. He is always on tension, unless he early learns to throw off cares as he does his overcoat, when he comes in from his day's rounds. A vacation every year would be repaid each one of us at the other end of life in extended life insurance. "The servant that knoweth his master's will and doeth it not shall be beaten with many stripes."

Perforce treated slightly here, it pays to go most intimately into every detail of the patient's life. We must find out where stress and strain occur; then order a reconstruction of the day's work, interspersed with frequent vacations or the enjoyment of his hobby. Each patient is a separate problem. That rare endowment, common sense, is the only guide.

This is the time, too, when we should be searching out and removing all discoverable infectious foci. I plead guilty with the rest of the profession to having gone a little mad in the wholesale condemnation of every tonsil and many teeth. And yet even now I do not know how to help it. The emphasis which has been placed upon these focal infections has done, and is doing, untold and inestimable good. We are not yet in position to say just how much good the crusade is doing, for I believe that the chief benefit in cleaning up these infectious sites is in line of prophylaxis. Like syphilis, when tissue damage and anatomical change have occurred, it is unreasonable to expect specific treatment or eradication of the distant focus to replace destroyed cells. So, when we see circulatory lesions, in which there is already evidence of breakdown, frankly I cannot tell whether removal of the suspected, or even actually diseased, teeth or tonsils will improve the situation. Better, however, in my opinion, the sacrifice of ninety-nine diseased teeth or tonsils that have no etiologic bearing than to miss one in which the damage done is not already irreparable.

But the second stage of decompensation has come. The patient finds that regulation of life's activities, even rest in bed, will not suffice to restore the balance. Something more is needed. Here is the point where I should in-

troduce advice as to the scrutiny of all of the functions; go into the necessity of securing proper rest, sleep, proper food, elimination through bowels and kidneys; the advisability of laying aside all business worries, etc. But I shall have to pass them by. We are all agreed as to their importance.

The sheet-anchor in this stage, as well as in the one to follow, is digitalis. I may seem a bit dogmatic in asserting that strychnine, cactus, caffeine and all the rest should be thrown into the discard; and we should pin our faith to digitalis.

We have been wandering a bewildering way in the wilderness of doubt lately as to when to use digitalis and when not; in what dose we should use it; and what preparation to use; about the "cat unit," and so on. Those of us in general practice remote from instruments of precision like the electrocardiogram, the polygram, and so forth, begin to wonder whether the drug is indicated in this case of heart trouble or the other. Possibly this doubt is responsible for our poor results, and has weaned us away from our old faith. We have been accustomed to think of digitalis as a pure and simple cardiac stimulant or at least tonic. We have been told that it invariably raises blood pressure. I believe we will get a new and welcome light on the action of digitalis, the why and wherefore of its use, if we will throw away this old belief. Such is not the true action of digitalis. Undoubtedly, there is a restorative quality in digitalis. But this is not in the direction of stimulation. Lewis is my authority in this statement. He says: "Those who regard digitalis as a cardiac stimulant mistake its character; its chief action is to rest the heart. To the heart foxglove is not tonic, but powerfully hypnotic. It extends the diastoles of the heart; it extends the periods of sleep."

If this conception of the action of digitalis be the true and complete one, then it would seem that it is not contra-indicated save when there is already interference with normal conduction through the bundle of His and its branches; in other words, unless the heart rate is already abnormally slow. Unfortunately, the reverse is not always true; digitalis has not the same happy effect in all cases. The fact is that digitalis has what might be spoken of as almost specific effect in one condition only. This is the state of auricular fibrillation.

Without instruments of precision we cannot always be certain that fibrillation actually exists. But we do know that it is the most likely explanation of the absolutely irregular pulse. By this we mean a pulse, the arrhythmic quality of which is such that during no series of consecutive beats is the rhythm the same as during any other like series. Fibrillation also is oftenest responsible for the existence of marked pulse deficit, where the beats per minute are much more numerous at the heart than at the radial pulse.

Whether digitalis will influence conditions when the pulse seems perfectly rhythmic at the wrist is a debatable question. My own position is that it will do no harm to try its effect intelligently; and sometimes, even when we would think there could be no good effect, we get it.

The bald statement that digitalis raises blood pressure and, therefore, should not be used in hypertensive cases is a great mistake. This whole question of blood pressure is badly muddled in many minds. Like fever, blood pressure is not a disease; and, again like fever, it is not always wise to fix attention upon high pressure and insist upon reducing it. I have never seen digitalis raise an abnormally high blood pressure. I have frequently seen the systolic pressure reduced while the patient was on heavy digitalis dosage. Usually there occurs a readjustment of pulse pressure. A compensatory systolic pressure may have fallen too low, while the diastolic had risen, thus leaving too narrow a margin of pressure to carry on circulation after the initial inertia of the blood mass is overcome. At any rate, other factors indicating the use of digitalis, it is not wise to take the blood pressure as a contraindication thereto. In just such cases we often see the happiest effects.

Much confusion also exists in regard to the dosage. Lately, several articles have appeared advocating what seems to most of us dangerously high dosage, such as a half ounce, or even a whole ounce, of the tincture. There are times when such heroic dosage is indicated and life-saving. In ordinary dosage the drug takes eighteen or twenty-four hours to act. With such intensive dosage we can anticipate the digitalis effects in four to six hours. But this is the only difference. What we want is to digitalize the patient; get the effects of digitalis. It should be noted with regard to the

advocacy of these large doses that it is to be given but once, at least until its effects pass off, and usually only in some emergency. Usually, there is time enough to get the effect more deliberately and possibly more safely, at least under the conditions in which most of us practice. But we must get the patient digitalized.

Eggleston recommends a plan of dosage by which he says the patient may be digitalized in one or two days: 6 or 7 grains of the powdered leaf or 1 dram of the tincture are to be given every six hours, day and night, for four doses. The dose is then reduced by one-half and the interval is shortened to four hours, giving four doses per day and none during the night. The latter dose and interval are continued until full digitalization is secured.

The question of dosage is crucial. Just what plan to follow to get the full effects is of little moment, with one vital proviso: If we have time enough, we may temporize with small doses, but in emergency we must approximate one of these plans that we consider heroic. The gravest criticism of most doctors in general practice is that they never get their patients under the influence of the drug; hence, the lack of faith in it, and the seeking after new drugs.

There is ample warning of digitalization. True, these are manifestations of minor intoxication. But we must bring the patient to this point oftentimes if digitalis is to help him. If nausea has not been present before, the appearance of nausea and vomiting is often the first indication. The reduction of the pulse rate, say, to 60, with approximate regularity in rhythm, is another. Or, if pulse deficit has existed, its improvement or disappearance is a pretty demonstration of the full effects of the drug. When any of these indications occur, the drug should be stopped, at least temporarily. But without some such evidence we cannot condemn the drug as ineffectual.

Closely akin is the choice of preparation. Broadly speaking, the doctor is safe in using the preparation with which he is most familiar. If he knows the drug-content is present, it becomes merely a question of adapting his dosage in terms of the crude drug. We should be reminded, however, that with all tinctures of digitalis the usual approximation of the drop and the minim is wanting. One preparation required 140 drops from the dropper to

touch the dram mark on the graduate. The infusion is notoriously unreliable. Few druggists dispense a good one, and if one such is found, he should deliver the day's supply afresh as the dairy does the milk.

Paraphrasing Osler's remark about the knowledge of syphilis: Know digitalis, and all things cardiotherapeutic shall be added unto you.

Now, for the third stage of cardiac decompensation. The patient must now be propped up to breathe. Foredoomed to failure in many cases, yet none is so extreme that we may not be gratified to see one restored even to many years of comparative comfort and usefulness. It is well worth the effort and the exacting demands made upon our time and attention. The patient's condition is distressing in the extreme. Condemned to live propped up in bed or chair day and night, panting for breath; too weak and breathless to talk or to eat; harassed by cough, oftentimes provoking nausea and vomiting; oedematous until it hurts; dropping into fitful, restless sleep of exhaustion, only to start into consciousness to relieve the dreadful apnea: as we survey the problem, what can we do?

First, we must make the patient comfortable. Not only from humanitarian motives, but because we cannot expect to restore the heart unless the patient can secure rest. I know of no place where a really trained nurse can be of such inestimable value. She can fix pillows and props, a pad here, support there, better than any awkward male hand can devise. And such devices go a long way toward aiding drug action, especially that sense of confidence and of the possibility of getting well that she instils. She can also fix those tempting little bits of nourishment which the patient will enjoy when he has no appetite for home dishes. Not the least of her services comes through her tactful ordering of the household and officious friends who insist upon holding the doleful wake while the dear departed is yet present to appreciate it.

But usually we need the help of drugs. Next to digitalis, there is one indispensable drug, and that is morphine. Nothing else will abate the respiratory distress, nor the pain, and put the patient into condition to rest tired body and mind. To withhold it is brutal as well as foolish.

Next, especially in the dropsical case, is the

question of elimination. With splanchnic congestion such as it is, nausea and vomiting usually preclude administration of digitalis until a brisk saline has acted copiously. Sometimes we replace or alternate salts with elaterium or jalap. At any rate, we must repeat the hydragogue frequently.

That double salt of theobromine, called diuretin, is a drug that has sometimes been of service in starting kidney action. The same drug, too, has sometimes served to replace morphine in those slighter forms of angina and anginoid pains we have in some high pressure cases. It should be remembered that theobromine tires the kidneys and, therefore, it should be stopped after three or four days, and that it often acts best with or following digitalis. Sparteine in 2-grain doses hypodermatically has sometimes affected diuresis when other drugs have failed. When these, with digitalis, do not have effect, we have reason to believe that the kidneys themselves are diseased.

Ascites is sometimes moved by the aid of purgation and diuretics. Hydrothorax rarely is. Therefore, when there is any considerable amount of hydrothorax, and if ascites is not lessening, paracentesis should be resorted to promptly, to relieve the distressed breathing.

And the patient must be gotten as rapidly as can be under the influence of digitalis. It pays to try out one of these so-called heroic methods. Under large doses we can often begin to lower the back-rest, a notch at a time, in forty-eight hours. If we adopted this plan of rapid digitalization, the calls for intravenous therapy would be infrequent. If digitalis can be made to show effect in four to six hours, we can hardly expect more of strophanthin in the vein, and the one is at least as safe as the other. Particularly if the patient has been taking even moderate doses of digitalis within ten days, it is unsafe to use strophanthus intravenously; and it is not worth while to use strophanthus any other way.

In the congestive case, we should not lose sight of the emergency value of blood-letting. It is not necessary to perform a surgical operation to bleed. Often, when diastolic pressure is high, a simple large-bored needle thrust into the vein will bring away enough blood, especially if a syringe be used occasionally to aspirate as clots begin to form. Lately, I have used with good effect the Potain aspirating

bottle connected with the needle in the vein, and drawn off all the blood needed. With the relief of stagnation on the venous and pulmonary circuits, it is often little short of miraculous to see digitalis, hitherto inactive, take effect.

Happily, we enter upon the stage of convalescence. About the management of this stage there can be no rules. Usually when the patient has been able to discard his back-rest for a week, it is safe to allow him up in chair for fifteen minutes the first day. Within ten minutes after his return to bed we should note his pulse and respiration rate. If either are notably elevated, we are warned to proceed cautiously. Only after the patient is able to sit up most of the day, without producing evidence of heart strain, should he be permitted to walk. He should be taught the subjective evidences of heart strain and, upon recognizing them, to stop. If some degree of breathlessness and the like persist, it is well to keep the patient on small doses of digitalis, trying to regulate the dose to the point of keeping the pulse regular and around 70 to the minute.

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SURGICAL SIDE OF CARDIO-VASCULAR-RENAL DISEASES.*

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"The Surgical Side of Cardio-Vascular-Renal Disease" as the title of a paper is a little ambiguous. From the wording, it might mean a discussion of surgical measures applied to the treatment of this condition, but, as decapsulation of the kidney is the only operative procedure which has been suggested for that organ, and none has been devised for the heart and blood vessels which would offer relief in this condition, the subject resolves itself into a discussion of surgical procedures on individuals who are suffering from cardio-vascular-renal disease.

It is a matter of common knowledge that patients who are suffering from this disease are much poorer surgical risks than normal individuals. This does not prevent them from developing conditions which demand surgical intervention, however, and we must be prepared to give them the best chance possible for recovery.

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The first essential is a recognition of the condition of the heart, kidneys and vascular system. This, of course, is the reason for the routine examination of the heart and the urine and the estimation of the blood-pressure, which precedes every operation in a well regulated hospital, today. These routine examinations, however, may have to be supplemented by more detailed investigation, but these have been discussed by the other essayists.

Permit me to emphasize the great value of blood-urea determination as a prognostic indication, because it is not unusual to see a phthalein output at or near normal when the blood-urea is dangerously increased. This is particularly true of prostate cases.

Having a clear conception of patients' impaired chances, the surgeon must ask himself the question, Is the operation absolutely necessary at this time? Numerous emergencies arise—an acute appendix, a strangulated hernia, a perforated ulcer, which leave no question as to the imperative necessity for operation, but operations of election may be omitted or postponed to "a more convenient season." What has been aptly termed "meddlesome surgery" has no place here.

Having now determined upon operation, the next important consideration is the choice of an anaesthetic. Both ether and chloroform have a deleterious effect upon a previously diseased kidney, and anyone who has examined post-operative specimens of urine from a considerable number of patients knows how very frequently albumen and casts are found when no kidney disease has been recognized before operation. Gas-oxygen anaesthesia is of value in certain cases, but local anaesthesia finds here one of its great fields of usefulness and a wide variety of operations may be done under novocaine or some similar drug. The combination of gas and oxygen with local anaesthesia, as perfected by Crile, works like a charm in his hands, but most of the rest of us lack either his skill or his patience, or both.

In a recent publication, Barker states that the cardio-vascular-renal patient stands anaesthesia and operation well, and we have all seen patients with bad hearts, whose pulses were more normal and regular under ether than at any other time. My experience, however, has been that the real trouble showed up two or three days later. A case in point is that of a girl of twenty, who came in with

acute intestinal obstruction. Examination showed a loud mitral murmur and albumen and casts in the urine. Operation was simple and short, as a single obstructing band was found and released and the patient apparently stood it well. Nevertheless, two days later she died with a definite cardiac failure.

Prostate cases present to the surgeon the problem of dealing with the cardio-vascular-renal individual more frequently than any other single class of cases. The result has been, as you all know, the adoption of local anaesthesia for a rapidly increasing number of these cases.

When I came to this meeting, I left in the hospital a man on whom we recently operated for a large hernia. He had a blood pressure of 240 systolic, with albumen and casts in the urine. We used a local anaesthetic and he is now ready to leave the hospital after an uneventful convalescence. I feel sure that any general anaesthetic would have been extremely dangerous for him.

In eclampsia, which may be considered as of a similar nature to the subject under discussion, local anaesthesia has also been of great value when a Caesarean section becomes necessary.

Therefore, as you have already gathered from these rambling remarks, my idea of the relation of cardio-vascular-renal disease is this:

1. Acquaint yourself with the true conditions of your patient, by all means available.
2. Assure yourself of the necessity of surgical intervention.
3. Plan to protect your patient's heart, vessels and kidneys as much as possible, and this will probably lead to the use of a local anaesthetic.

NEURO-SYPHILIS.*

By GEORGE A. WRIGHT, M. D., Marion, Va.

The subject of this paper is the result of deliberate thought, believing that it should prove of interest to members of this Society. After doing general practice for more than twelve years, it is my conclusion that no diseased condition of the human anatomy, organic or functional, is more commonly misdiagnosed than latent syphilis, when involving the ner-

vous system. In this connection, I might properly state that the early diagnosis of neuro-syphilis is equally important as the recognition of tuberculosis in its incipency, from the standpoint of successful treatment. However, on this point men differ, there being a small percentage of prominent experienced physicians who claim that treatment is of little avail; others being able to demonstrate successful results.

According to numerous cases treated by various methods, which I propose to take up later, all have been improved, with a good per cent. of apparent permanent cures. These, however, do not embrace cases far advanced at the time of admission.

↓ The vast majority of cases of syphilis, under ordinary treatment, apparently regain their normal health and pass from medical observation into oblivion. In the course of ten or more years, from 3 to 5 per cent. of all such cases develop symptoms incident to general paresis or tabes.

Some of us recall having treated certain cases of hysteria, neurasthenia, and the like, and having prayed to the good Lord, "From all such deliver us." Had we made further investigation, in many instances, syphilis would have been found to be the underlying cause.

As formerly suggested, the outcome of cerebro-spinal syphilis, general paresis and tabes, depends largely upon a correct diagnosis by those medical men who come in contact with such cases while in an incipient state. At that time the disease may manifest itself in many and varied forms, being so camouflaged, in many instances, that syphilis may not be suspected; in fact, it is commonly the case that the patient himself does not realize that he is sick, and members of his family, after noting abnormalities of his manner and appearance, inaccuracy in the quality of his work, and that he no longer displays his former shrewd business ability, etc., are prompted to present him for examination.

↓ A review of his complaints suggests first neurasthenia, in which condition we find him a pessimist, while in paresis he is optimistic. The neurasthenic loves to dwell at length on his afflictions, thereby differing from the parietic, in that information is brought out only after repeated questioning. His vague aches and pains simulate rheumatism and are dis-

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tinguished from leptic pains by their shooting or "lightning-like" character.

✓ Too great importance should not be attached to a history of former infection, in view of the fact that the initial lesion may have escaped detection and further, that in probably 50 per cent. of the cases of general paresis and tabes, the characteristic secondary symptoms (skin, mucous membrane and lymphatic) fail to appear as early manifestations, according to authentic statements. This brings up a debatable question, viz: Are there two strains of spirochaeta, or is it not until late in the course of infection that virulency is attained?

✓ Headaches, often simulating migraine, are among the most constant early symptoms, the patient complaining of "burning-drawing" sensations of the scalp. These, however, are not limited to this area, but are widely distributed, with areas of anaesthesia, hyperaesthesia and a sense of formication, involving the lower extremities, as a rule.

✓ In the tabetic form, the early symptoms in their order of importance are (1) absence of tendon reflexes, (2) Argyll-Robertson pupils, (3) Disturbed station (Romberg), (4) Girdle sensations and lancinating pains, (5) Diminution or loss of cutaneous sensibilities. It is understood that later, as the disease progresses, loss of control of bladder and rectal sphincters is observed.

✓ Among the early manifestations of neurosyphilis we commonly observe important indications, frequently mistaken for epilepsy or apoplexy. Apoplectiform attacks occur earlier in the course of the disease than do epileptiform. In the former case, the patient has apparently had a cerebral hemorrhage, with a resulting hemiplegia, which, however, is of short duration, that is, from 6 to 48 hours. At the end of this time patient has completely regained his former function of involved parts. This condition must not be confused with permanent paralysis occurring in the course of early general syphilis, which is responsible for the majority of cases of paralysis before the age of forty.

✓ Later, there will be noted a disturbance in co-ordination, twitching of the facial muscles; the tongue protrudes with jerky movements, and there are coarse tremors of the hands. Multiple sclerosis, paralysis agitans, encephalitis lethargica, and chronic alcoholism are differentiated by Wassermann examination. In

cases presenting any of the foregoing symptoms, the eyes should be carefully inspected, it being here that thorough investigation usually reveals valuable information upon which to base a diagnosis.

✓ Such findings as inequality of the pupils, irregularity in outline, their failure to react to light with preservation of accommodation (Argyll-Robertson pupil), or pupils unequal with sluggish reactions, when accompanied by any of the symptoms as outlined above, invariably demand Wassermann examination. A serum Wassermann is not sufficient to exclude syphilis, since in latent syphilis, more especially when the central nervous system is involved, the reaction does not show four plus in all cases, a small per cent. being either doubtful or negative.

✓ By examination of the spinal fluid we find high pressure, increased globulin and cell count, with four plus Wassermann, almost without exception. Hence, it is the fluid rather than serum that should be submitted for Wassermann in suspected cases.

In reference to the technique of lumbar puncture, I wish to state that the former method of going in on the side line is not only difficult but uncertain as well, while the mid-line puncture is performed readily, with self-confidence. This procedure is simplified by placing patient in upright position, though it is unnecessary to add that less risk is assumed in the recumbent posture. It is always important to exclude brain tumor, in which condition lumbar puncture is done with great caution.

✓ The most popular method of present day treatment consists of giving salvarsan intravenously, .5 to .6 gm., and after an hour withdrawing a given quantity of spinal fluid, 20 to 30 C. C., working upon the theory that this quantity is replaced fluids containing arsenic and benzol. This plan of treatment has proven satisfactory in the hands of some operators.

✓ The Swift-Ellis method is also popular and is possibly practiced more extensively than all others, there being the objection that severe reactions follow in occasional cases. But the foregoing plans of treatment have been almost completely abandoned in favor of the following system of treatment.

✓ After proper preparation of patient, salvarsan is given intravenously. On the following day, mercurialized serum, containing 1 to 50 grain

bichloride of mercury, or an ampule containing the same quantity of bichloride, the contents of which are thoroughly mixed with withdrawn spinal fluid, is given intraspinal by gravity.

Numerous cases could be cited as evidence of the value of this treatment in neuro-syphilis. In this connection I refer especially to intraspinal administration of bichloride of mercury and, in so doing, realize that few men today have the courage to resort to this method of giving mercury in such cases, largely on account of the reaction which usually follows.

According to my experience with bichloride of mercury, which I have given intraspinal in more than fifty instances, no method of treatment gives as satisfactory results. Inasmuch as mercury for years has been held out as a specific, why should this not be so?

Referring again to the reaction, it is sometimes slight and again severe, resembling to a marked degree meningitis, there being spasticity of the muscles of the neck, severe headaches and chills, with temperature in one instance as high as 103.6° , with severe pains along the course of spine and radiating to the limbs.

The encouraging feature is that these symptoms are of short duration. In no case have I seen this reaction continue after forty-eight hours and in the majority of instances it subsides at the end of the first day.

The following cases represent a fair average of fifty-two subjects treated.

CASE No. 6065.—Male, age forty-six, and the father of three apparently healthy children. Admitted June 28, 1918, in a state of maniacal excitement. Examination shows considerable emaciation—"washed out" facial expression. No organic trouble other than that involving the central nervous system. Disturbed station and gait. Left pupil slightly dilated, with sluggish reaction to light. Coarse tremors of tongue and hands. Inaccurate articulation in quoting the phrases: "Truly rural"; "Around the rugged rock the ragged rascal ran"; "Seventh Massachusetts Light Artillery," etc.; patient having grandiose ideas with delusions of persecution.

Positively denied history of infection or former symptoms of the disease. Blood Wassermann negative. Spinal fluid clear, under high pressure, increased globulin and 32 cell count, with four plus Wassermann.

TREATMENT.—Salvarsan, .6 gm. given intravenously and on the following day, bichloride of mercury, gr. 1/50 intraspinal. These treatments were continued at intervals of seven to ten days for ten weeks when they were discontinued for sixty days, when the blood and fluid were again examined. Blood negative; fluid doubtful. Patient given four additional treatments, intravenous and intraspinal, when he showed negative Wassermann, at which time all former mental symptoms had disappeared. Remained in the institution for three months without recurrence and was furloughed to resume his former occupation and business relations. Returned to the hospital after one year for re-examination, the same being negative, with no mental aberration.

CASE No. 6171.—Admitted November 14, 1919. Male, age 48, of German descent. This patient had escaped from a psychopathic hospital in the city of St. Louis, was arrested and lodged in jail in the city of Roanoke, later adjudged insane and committed to the Southwestern State Hospital, in a state of marked mental disturbance.

Like the majority of paretics, this patient had delusions of grandeur and persecution, with the prominent characteristic neurological symptoms of general paresis. Diagnosed as paretic in former hospital, also. A distinct feature in his case was an offensive nasal necrosis of long duration, which promptly cleared under treatment. Was given intravenous salvarsan weekly, with bichloride intraspinal each succeeding day, until ten such treatments had been given, with perceptible improvement following each treatment. I failed to state that both blood and fluid in this case showed four plus Wassermann. After completion of course of treatments, both blood and fluid were negative, with mental improvement to such an extent that patient performs assistant work to attendants in a manner thoroughly satisfactory. No remissions after a year.

CASE No. 6472.—This patient voluntarily came to the hospital for treatment of morphinism, claiming that he acquired the habit as the result of neuritis, which condition had existed for three years. Morphine was the only drug which gave relief, having formerly been prescribed by his family physician. Examination showed involvement of the brachial

plexus, with sensory and motor ulnar disturbance.

Inspection revealed marked pupil inequality, sluggish reaction to light, with fair accommodation. Patient admitted specific infection twenty years before, but insisted that he had been cured of the disease.

Blood Wassermann negative (twice made). Lumbar puncture showed fluid clear, under high pressure, forty pleocytes to the C. Mm. with increased globulin content. Wassermann four plus.

This patient had no delusions, illusions or hallucinations; in fact, at no time had he shown mental symptoms, and he was finally convinced that his neuritis was due to specific infection and readily submitted to treatments. Was given three intravenous doses of .6 gm. each of salvarsan, at intervals of every tenth day; each succeeding treatment was followed by bichloride intraspinally, at the end of which time the blood still being negative, intravenous medication was discontinued.

I wish to say that occasionally in cases of syphilis you will find the blood negative to Wassermann, while if from .2 to .3 gm. of salvarsan be given as a provocative, you will get a positive reaction. Bichloride was given intraspinally every ten days to two weeks, according to reactions, until spinal fluid was negative to Wassermann, with a disappearance of his former neuritis.

Patient was kept under observation for six months, with no evidence of a recurrence of his former symptoms.

Southwestern State Hospital.

THE TREATMENT OF SYPHILIS.*

By PHILIP S. SMITH, M. D., Abingdon, Va.

The subject assigned for this paper is too broad to attempt anything more than a brief outline of the more salient points which may prove of interest to the average physician. For this reason, references to the literature have been purposely avoided. Syphilis, as we all know, may be an acute fulminating disease, or, on the other hand, may present itself as a most insidious, chronic malady—the type depending largely upon the virulence of the infecting organism, the resistance of the infected individual, and the stage in which the patient

offers himself for treatment. It is neither expedient nor possible in the limited time available to attempt any discussion of the treatment of the ravages left in the wake of syphilis, for such a diversion would lead to an endless maze of therapeutics, including, among others, aortic insufficiency, aneurysm, ocular lesions, pathologic conditions of the liver, kidneys, spleen, etc.

The treatment of the disease, itself, is eminently satisfactory in one particular, in that we have available one or more drugs that may be regarded as specific—a fact, unfortunately, that is all too rare in medical therapeutics; for, with the exception of quinine in malaria, antitoxin in diphtheria, thyroid extract in myxedema and cretinism, and possibly digitalis in myocardial insufficiency, we are too often confronted with the inability to do anything more in the exhibition of drugs beyond the treatment of symptoms, relying upon nature, rest and nursing to effect a cure. Each one of us must have experienced the one disillusionment common to physicians in being rudely brought face to face with the fact that the medicine given us in our childhood and adolescent years by the family physician, after feeling the pulse and observing the condition of our tongue, was not the one specific agent working the miraculous cure we then attributed to it.

To treat syphilis successfully, one or two essentials are necessary. The first and most apparent factor is a correct diagnosis. This statement may seem so trite and obvious as to appear not worthy of mention here. Yet, how many of us have had the experience of seeing a patient, who stated that he had previously acquired a venereal infection thought to be syphilis, and was so treated for a variable length of time, with no proof clinically or from a laboratory standpoint that the primary lesion was a chancre? Perhaps he may have been infected with the *treponema pallidum* and now gives a negative Wassermann as the result of treatment; or, on the other hand, the ulcer may have been a chancroid. The question then naturally arises, "Was he ever luetic, and does he need further anti-syphilitic treatment now or in the future?"

This question logically leads to the value of the laboratory in the diagnosis and treatment of syphilis. The differential points in distinguishing clinically between a chancre, chan-

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croid and an infected herpes are of distinct value; yet oftentimes the appearance of the lesion, the patient's history of the time of exposure and incubation period are not sufficient to warrant a definite expression of opinion. Here the laboratory technician, by making a microscopical examination of the material obtained from the ulcer with the dark field illumination, or by the Wassermann reaction, can afford most valuable aid in instituting early treatment.

Furthermore, to treat a patient with syphilis successfully, it is essential to secure his full co-operation. He must be made to understand in advance that he is the victim of a chronic, systemic infection; that his primary lesion is merely the portal through which the infecting organisms entered; that the cure or disappearance of the chancre, mucous patches, skin lesions, gumma, etc., does not mean that he is well; that the treatment is necessarily expensive and inconvenient; and that his business and pleasure may have to be temporarily interrupted or sacrificed. Unless these facts are understood, the results in the vast majority of cases will be unsatisfactory to the physician and eventually to the patient. Fortunately, as the result of propaganda conducted by the State Boards of Health, and by other organizations, including Federal agencies, the public generally is much more familiar, not only with the frequency and danger of the disease, but with what is required of a patient who undertakes treatment. The information recently gained by four million men in the military and naval services regarding this subject has been extremely beneficial.

The history of the development of modern anti-syphilitic therapy is one of the brightest chapters of medical literature. Probably there is no other disease, tuberculosis not excepted, in which the treatment advocated from time to time has been so diversified. The pharmacopeia of today still mentions in an apologetic manner a number of drugs which were formerly believed to be of value in the treatment of syphilis. This fact has been utilized commercially by fakirs the world over in offering their misbranded nostrums to a gullible public as "blood specifics and purifiers." Such a deplorable state of affairs has resulted from a number of causes, among which may be mentioned the widespread incidence of the disease affecting royalty and peasant, the rich and the

poor, the socially elect and the outcast. Furthermore, the victim of the infection, if acquired in the usual manner, is conscious of his stigma, and oftentimes seeks the covert and "back-door" means of taking treatment for fear of publicity. It is hopefully believed that the time is not far distant when Federal and State authorities will impose such restrictions upon the claims and sales of these patented products as to make the business unprofitable.

Out of all the confusion in the past resulting from the numerous drugs advocated by conscientious physicians for the cure of syphilis, the worthless agents have, in a large measure, been replaced by a few that form the basis of scientific therapy today—namely, mercury, arsenic and the iodides. And yet, with this limited number of proven value, the subject of anti-syphilitic treatment is still far from being closed. The advances in recent years are but a stimulus to still better things in the future. Admitting that the three drugs mentioned are the main reliance of the physician, the large number of preparations of each, official and unofficial, with the tempting statements made by commercial laboratories that their special formula is equally as efficient and more easy to administer than those generally used, has resulted in a variety of substitutes more or less worthless. Osler, in paraphrasing the Scriptures, "Know syphilis, and all things medical shall be added unto you," had in mind chiefly the diagnosis of the disease; yet the truth of his statement applies in a large measure to its treatment.

The inclusion of the iodides as one of the specific agents mentioned must be qualified to some extent. It is now generally agreed that these salts are in no sense spirocheticides—their value consisting in the alterative effects which they possess. For instance, in the absorption of products of a disintegrating gumma, and in the effect they exert on the sclerotic walls of a chronic aortitis and the connective tissue proliferation replacing the highly specialized cells of the central nervous system resulting from old syphilitic changes, the iodides are of undoubted value when administered in increasing doses to the point of tolerance.

For many years, mercury has been the mainstay of the physician in dealing with the luetic. In spite of time and changing opinion, it has stood the test as the most active and

potent agent in destroying the spirillum of syphilis. Aside from the psychic effect on the patient, it has been fairly conclusively proven that of all the preparations of mercury the ointment is the most efficient form in which to administer the drug. It is true that its use is offensive to the more esthetic, and yet the patient is made to feel that he is actively engaged through his own efforts in effecting a cure. Our practice is to write for the dilute ointment and instruct the patient to cleanse the skin with ether before beginning the inunction, thereby mitigating the occurrence of a troublesome dermatitis. The sites selected are the non-hairy inner aspects of the thighs and the sides of the chest walls. Alternating between these four areas in consecutive order, he is told to rub the ointment in thoroughly until it disappears, using, roughly speaking, an amount equivalent in size to the last phalanx of the thumb. A hot bath at least once a week is advised, and the treatment continued six days a week until the initial evidences of salivation or other symptoms indicating maximum tolerance appear. A rest interval of from one to two weeks is usually sufficient when the treatment may be resumed. It is highly important that the teeth should receive proper dental attention and the mouth kept in the best possible condition.

If, for any reason, the ointment cannot be used, another preparation of value is the salicylate of mercury, which is usually given once a week, intramuscularly, in the dose of one grain. It has been recently demonstrated, however, that in a large series of cases a positive Wassermann was influenced in only 9 per cent. of the cases treated exclusively with this preparation in the dose mentioned. The investigator concludes that the dose should be not less than 2 to $2\frac{1}{2}$ grains if improvement is to be expected. This method of treatment has one advantage in making it necessary for the patient to report to the physician at regular intervals, giving the latter an opportunity of observing any improvement or untoward effects resulting from the drug.

The bichloride of mercury has enjoyed a popularity for many years as an anti-syphilitic agent. Until recently it has been given by mouth and in most cases is fairly well tolerated. The practice of administering it combined with the iodides is not a wise one, since oftentimes the latter drug can be increased

much more rapidly and to a greater extent than is possible with the corrosive preparation of mercury. The same objection applies to the protiodide pills with the additional disadvantage that the pills, when old, frequently become more or less insoluble and have been found to accumulate in the patient's intestinal tract from which they are expelled unchanged.

The objections against the use of mercury have been based on the fact that in large doses it frequently results in salivation and irritation of the gastro-intestinal tract and kidneys, particularly. Furthermore, treatment must be continued over such long periods of time that the patient, becoming weary in well doing, fails to report for observation and advice, and finally, skeptical or indifferent, decides to stand or fall on what he has already done. Conscious of these disadvantages in the use of mercury, and prompted by the ambition to discover an equally efficient spirocheticide with none of its untoward effects, Ehrlich, after a long series of experiments with arsenic, offered to the medical world his well known salvarsan and neo-salvarsan. Its reception at first was heralded as a certain cure of syphilis in any form or stage; its action was prompt, complete and the luetic was made to feel that he had washed in the Pool of Siloam and was thereafter healed. As time passed, however, the remarkable "cures" first attending its use began to return with clinical manifestations of a recurrence of symptoms, and syphilographers were soon forced to admit that arsenic, even in the tremendous doses made possible of administration by Ehrlich's formula, could not supplant mercury altogether in the treatment of lues. Disappointing, in some respects, as were the initial observations of the effects of salvarsan, there is no one today at all conversant with the subject, who will not admit that as an agent for quickly controlling the ravages of syphilis, whether of the primary, secondary or tertiary type, arsphenamine is pre-eminently the choice of drugs. When used in conjunction with mercury we have the best possible combination yet devised for the treatment of the disease.

It is not possible in this paper to discuss the frequency or types of untoward reactions resulting from the use of arsphenamine. It is sufficient to state that, while at times such reactions do occur following the most careful technique, the risk of serious harm to the pa-

tient is exceedingly slight—in fact, almost negligible if the proper precautions are taken. This implies a thorough examination of the patient before the initial injection and a urinalysis before and after each treatment. While aware of the fact that arsphenamine is more potent than the neo-arsphenamine, the latter preparation for some time has been our choice because of its relatively greater safety. With the exception of chilliness, nausea, headache, slight fever and occasional vomiting, we have seen no reaction of any moment. Even the symptoms mentioned are the exception rather than the rule.

Our practice is to begin with .3 gm. if a reaction seems likely or if the patient's condition, for any reason, suggests the undesirability of a larger initial dose; otherwise .6 gm. are given. The second injection is usually greater by .3 gm., with .9 gm. as the maximum dose. Unless there are contraindications the treatment is repeated at intervals of five days, six injections constituting a series.

The drug is dissolved in freshly distilled, sterile, filtered water to which sodium chloride is added before boiling, in the strength of a physiological salt solution. Ten c. c. of this solution are used for each decigram of the drug to be administered. When thoroughly dissolved, it is given at room temperature (70° to 80° F.). After a tourniquet is applied to the arm and the cubital fossa cleaned with iodine and alcohol, the disconnected needle is first inserted into the vein until the blood flows freely through it. The tourniquet is released, and while the connection is being made between the tube and the needle, salt solution is run through to avoid the possibility of air entering the vein. If no mass appears above the point of puncture, proving that the needle point is still within the vessel, the arsphenamine solution is added to the funnel before the saline altogether disappears. Control of the flow is maintained by lowering or elevating the funnel or by means of a stop-cock. Rapid administration is highly undesirable. Following the injection, the patient is kept in bed for twenty-four hours on liquid diet.

Time and your patience do not permit of a discussion of the intraspinal treatment of chronic cerebro-spinal syphilis with salvarsanized and mercurialized serum, as advocated by Swift-Ellis, Ogilvie and others. It must be admitted, however, in spite of its critics that,

whether from the reduction of the intraspinal tension incident to the lumbar puncture or from the direct application of the drug to the regions affected, improvement, unobtainable otherwise in advanced tabes or paresis, oftentimes results.

The most difficult problem connected with the treatment of the syphilitic is, "How long shall we treat him?" In other words, "When is he well?" No definite answer can be made to these questions, for each patient is a law unto himself and the treatment must be individualized. The only general rule that can be applied is that it is better to over-treat than to stop prematurely. In any event, it must be continued vigorously until the clinical symptoms disappear and the blood and spinal fluid Wassermanns remain negative for three to six months after all medication is stopped. Repeated blood and occasional spinal fluid tests should then be continued at intervals of six to twelve months for several years, and the patient advised to regard any subsequent symptoms as a manifestation of recurrent syphilis until proven otherwise.

The best authorities agree that a patient seen with early manifestations of the disease should be advised against marriage or sexual intercourse within three years following the date of his infection—and only then if the treatment has been thorough and he has been free from symptoms and Wassermann negative for at least one year. Here the proverbial "ounce of prevention" is worth many pounds of mercury and arsenic.

Of course, it is realized that certain forms of tertiary syphilis with cerebro-spinal involvement can never be cured and that treatment merely renders the patient's existence more tolerable. With such an unfortunate one, arsenic, mercury and the iodides must make up a part of his medical diet remittently until intercurrent secondary infections or organic visceral break-down transfer him from the hands of the physician to those of the undertaker.

SUMMARY.

1. The successful treatment of syphilis implies a correct diagnosis, proper laboratory controls, and the full co-operation of the patient.

2. Mercury and arsphenamine are the most efficient drugs available for combating the disease. The ointment is promably the most

active preparation of mercury for this purpose, and the intravenous use of neo-arsphenamine is the most satisfactory method of administering arsenic in the average case of syphilis. With proper technique few reactions result.

3. Iodides are of value chiefly in tertiary syphilis because of their alterative effects.

4. Intraspinal treatment of chronic cerebrospinal syphilis with mercurialized and salvarsanized serum is advisable when other measures fail.

5. No general rule can be offered as to the length of time treatment should be continued.

6. Early syphilis, vigorously treated, is curable or controllable; in tertiary syphilis involving the central nervous system the prognosis is poor.

A FEW POINTS IN THE DIFFERENTIAL DIAGNOSIS OF PULMONARY DISEASE.

By E. E. WATSON, M. D., Salem, Va.

Since the recent terrible pandemic of "flu," the diagnosis of pulmonary conditions has occupied such a prominent place in medical literature that one hesitates to attempt a further discussion of this topic. The difficulties in diagnosis which the lungs present, however, even to those supposedly skilled in this field of work, would seem to warrant a brief review of this subject.

In a discussion of chronic pulmonary lesions, we must necessarily deal largely with tuberculosis, not only because of its unfortunate prevalence, but because of the grave results to both patient and family, that attend a delayed diagnosis. Only by a fairly early diagnosis can a patient hope to regain his health sufficiently to resume his place in the social and business world; only by an early diagnosis can he know to take the necessary precautions to prevent his passing the scourge to his children and family.

We have in the tuberculin test a very accurate test for tuberculous infection, but unfortunately it is not a specific index of the disease tuberculosis. The only absolute proof of clinical tuberculosis is the finding of the tubercle bacillus in the sputum, and to wait for its appearance is often to defer the diagnosis till the lesion has become hopelessly ad-

vanced. Often we can use all the painstaking care and skill at our command, and then must be content to make a diagnosis of tuberculosis by exclusion.

A detailed painstaking history combined with a thorough knowledge of the symptoms and pathology of the disease, and consequent ability to interpret the history correctly, is of the greatest value. The two symptoms, the importance of which I wish to emphasize, are hemoptysis and pleurisy. Hemoptysis, particularly when "coming from a clear sky," demands a diagnosis of tuberculosis until some other etiological factor can be conclusively proven. Likewise, acute pleurisy, either with or without effusion, is as a rule only a symptom of pleural or pulmonary tuberculosis and should be so considered until proven otherwise.

In examining the chest, the patient should always be stripped to the waist and the back examined as carefully as the front. Persistent rales heard over the upper half of the chest, and which are accentuated by having the patient expire fully, cough once and inspire, mean practically always tuberculosis.

The dictum that basal rales, when apex is clear, should be considered non-tuberculous till proven otherwise, is probably a good working hypothesis, but one that, from my experience, should not be adhered to too strictly. The post-influenzal sequelae have been so varied and so confusing as to make us more reserved and less dogmatic in our diagnosis of chest conditions. I believe that most of us are too prone to blame everything on the flu, before we have given the patient the benefit of a thorough examination, including laboratory and stereoscopic X-ray studies. Particularly is this true in the case of basal lesions. I have been, on more than one occasion, much embarrassed by reporting basal lesions as non-tuberculous even after making X-ray and laboratory studies, and a short time later the sputum would be loaded with bacilli.

For many years there has been a controversy between the internist on the one hand and the X-ray specialist on the other, as to the comparative value of the physical examination and the X-ray in the study of the lungs, and other chest conditions. The internist has been slow to admit the value of the X-ray, due principally to the frequency of mistakes in interpretation made by men attempting chest X-ray

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without having as a groundwork an adequate and thorough knowledge of chest pathology. To quote Dunham: "The X-ray is only an instrument which accurately records different degrees of density, and it is for us to interpret these densities into terms of cellular pathology." Any one can learn the technique of taking good stereoscopic plates in a few weeks, but it takes years of experience to "interpret that plate into terms of cellular pathology." I would strongly urge a fluoroscopic and stereoscopic study of all doubtful chest conditions and, when possible, the clinician should discuss the clinical findings as well as go over the plates with the Roentgenologist.

Since frequently the first symptoms of pulmonary tuberculosis are those of a low grade toxemia, the focal infections—teeth, tonsils, sinuses—must be eliminated.

Every examination of the chest should begin with the nose. Nasal obstructions with consequent mouth-breathing evoke symptoms—cough, expectoration, pains in chest, general malaise—symptoms simulating tuberculosis to such an extent as to make the positive exclusion of phthisis extremely difficult.

Syphilis is sometimes erroneously diagnosed tuberculosis and a routine Wassermann is of inestimable value. Syphilis of the lung, however, is less frequently found than some writers would have us believe.

The presence of cardiac lesions, particularly mitral, demand the elimination of a pulmonary infarct, which may reveal physical signs, including rales in upper half of lung, identical with those produced by a tuberculous infiltration.

Hyperthyroidism, which classically simulates the symptom-complex of early phthisis, is very prevalent in the mountains of this State and, when associated with slight pulmonary findings, makes the differentiation between an active and latent lesion well nigh impossible. The Goetsch test is of much real worth in helping clarify these cases.

In those conditions where we have extensive physical findings as well as marked symptoms, frequent and repeated sputum examinations become a very important procedure. With advanced pulmonary lesions, negative sputum is strong evidence against tuberculosis, but this, like basal moisture cases, will often lead us into error if we become too dogmatic, as it is

not unusual to find repeatedly negative sputum in chronic advanced tuberculosis.

In my experience, those conditions most frequently erroneously diagnosed as tuberculosis are bronchitis, pulmonary abscess, bronchiectasis, and malignant new-growth of the lung and pleurae.

In conclusion, I would call your attention to the fact that too many cases of tuberculosis become advanced and too often hopelessly so, as a result of our failure to recognize the lesion at a time when we should have, had we done our full duty to ourselves and our patient. I am mindful, however, of the fact that not every case has an early stage. A patient in apparent health may have a rupture of a tuberculous bronchial gland, thus flooding with infection one or more lobes of a lung, in which case the disease is advanced from its very inception.

By correlating the history, physical, laboratory and X-ray findings, a fairly accurate diagnosis can, as a rule, be made.

In presenting this subject to this Society, I am sensible of the fact that I have, in a very disconnected and cursory manner, mentioned only a few elementary points in the diagnosis of pulmonary conditions, but trust that it may add some stimulus toward a continued and increasing interest in chest diagnosis.

Mount Regis Sanatorium.

A PLEA FOR THE PHYSICAL EXAMINATION OF SCHOOL CHILDREN.*

By CHAS. E. DYER, M. D., Pulaski, Va.

We will, no doubt, differ widely as to the best means of handling this—the most vital health problem now before the profession and the public—but I am confident of your unanimous endorsement of one feature of this paper, its length, for I fully assure you in the beginning that it is very brief. Yet the health of our children in general and the school children in particular is beginning to receive its appropriate but long delayed consideration. Some States (and let us hope that Virginia will soon be one of them) have enacted laws whereby physical examinations of children are made annually during the first days of the school session, and our colleges are realizing the importance of knowing the health status of their students, but, so far as

*Read before the Southwestern Virginia Medical Society, at Pulaski, May 11 and 12, 1921.

I am informed, only one has adopted physical examinations of the students as a routine. Although nearly all require a certificate of good moral character before entrance is possible, they seemingly are not concerned as to syphilis and tuberculosis.

We should take time to think of the scope and possibilities of such examinations when systematically made. Beginning with the scalp, we should look for eczema and for other things which, more often than is suspected, are present and, when so, will spread to others and cause much embarrassment to the innocent victims and humiliation to their mothers. Think of the percentage of defects that would be found and how easily they may be corrected at this period of life and how, when neglected, they will add to the toll of suffering and loss of health and happiness.

The nose—the most shamefully abused organ in the body, surgically—so often harbors bacteria of contagious diseases that it would be interesting to know the percentage of our school children that are carriers and distributors of contagious diseases. If you are not interested in this feature, do you not believe the most inspiring and helpful picture imaginable would be one thousand school children lined up after lunch going through a tooth-brush drill for five minutes?

As we descend in this inspection, looking at the organs as we come to them, we note open and discharging tubercular cervical glands which offer their daily capacity of possible—yea, very probable—infection to others. Valvular cardiac disease would be found; also incipient tuberculosis. Again, by looking closely at chests, some would reveal nail scratches. If in straight lines, the indirect cause will be found in the seams of the clothing or nearby, but, if revealed with numerous small punctures, the cause, a parasite, is within. Simply revealed but seldom discovered, poison oak gets the credit for these sores, if by accident the teacher should see them. Though seldom found, the sores last throughout the session and others get them. Passing to the feet, many will have pes planus in various degrees, which can be easily benefited, if not entirely relieved, by properly adjusted adhesive straps which in later years offer little possibility of material benefit.

In this survey we note what would be accomplished by thorough examination of or-

gans and regions as approached. Some may think best to begin at the feet and ascend; I prefer to start with the scalp and descend—work being accomplished a degree easier when assisted by the law of gravitation. I trust no one will advocate beginning in the middle and skipping here and there, omitting important organs entirely, and finally falling down on the examination. Our wide-awake and most successful corporations have their employees examined annually, and those in whom defects are found are shifted from one occupation to another better suited for their physical and mental conditions.

No one should be allowed to make these examinations except a member of the ancient and time-honored allopathic school of medicine, thus eliminating without consideration all other so-called branches of medicine which, in reality, are empty and barren “paths”; the teacher, who could do no more than to strongly advocate its importance; and the nurse, wonderfully trained and helpful in her line but not along lines which make her inspection of any value. For her to attempt it would only confuse the public and probably disgust the pupils.

We are making progress in other fields. Many counties in the State have county farm demonstrators, for example, who spend nearly all of their time trying to teach the farmers how not to farm, but we have no one to inspect our school children and teach them the simple rules of health, and to locate their defects which, when taken in time, amount to so little, but, if neglected, lead to serious consequences. The farmer knows the qualities of a horse and will see even a spavin the size of a buckeye across the street, but would be much surprised if informed that his son has a hernia twice as large, or that both son and daughter have urine loaded with albumen or sugar. He will remove and isolate a sick animal from the herd to protect the others against the ravages of disease. He knows full well the value of vaccine against black leg and cholera. His trees are sprayed in order to obtain better fruit, but few ever heard of the Schick test for susceptibility to diphtheria, or inoculation against typhoid. He often hears Johnnie complain of headache when attending school, especially when preparing for examinations. The doctor has been consulted who promptly administers coal tar derivatives for the alleged

neuralgic malady when a momentary examination of his eyes would reveal defective vision. Many pupils go through our high school with refractive errors sufficient to deny them seeing the figures on the black board. They are often considered mentally dull when the trouble is either bad vision or bad hearing, constipation, extreme and youthful use of cigarettes, lack of stimulation corporally applied, failure to obtain restful sleep from post nasal space choked by adenoids, and many other things too numerous to mention, including a paramount and ever present desire to shoot crap.

Who is to blame for the belief among the laity that the cessation of menstruation causes tuberculosis, instead of *vice versa*? A great deal of ignorance and even superstition is due to our continued failure to inform the public of fundamental facts that every one should know and the seeming desire on the part of some members of our profession to enshroud in mystery all the ailments and even the most simple truth concerning the human body.

The *modus operandi* of infectious and contagious diseases which so often visit our schools, causing much expense, loss of time, health and life, surpasses our understanding and, when an unusual or not suspected disease makes its appearance, many things are suggested, but the diagnosis is not arrived at until much damage has been done. At Camp Greenleaf, Georgia, in January and February, 1918, where about eight hundred physicians were receiving their intensive military training, all sooner or later contracted the so-called camp cough, for no one escaped. On my way there, I met one of the best diagnosticians in Southwest Virginia and one of our most active members, who informed me that the trouble was due to a streptococcus infection. No one ever called it influenza, though each case presented more clearly than a text book could describe it the respiratory form of influenza. As I think of it now, I can easily recall having seen all three forms of influenza.

It is not unusual to find three or more cases of infectious disease in widely separated sections, and upon inquiry to discover that all came from the same school room, but we have no idea of the origin of the infecting agents. At times the indication is that a fearful epidemic is imminent, but it passes off; then, when least expected, we have an epidemic of

serious character. To my mind the leading factors are the human and animal carriers of disease, including the town cow, which is probably the star actor. The old theory of germs lodging around for twenty years or more, then suddenly being carried in clothing, and being divided into three equal parts, never appealed to me. Up to the time of the World War much was written about "Typhoid Mary" as if she were some strange freak of nature and practically the only one that ever existed. But carriers are always found when infectious or contagious diseases are present.

In case of infectious diseases continuing to come from one school room, the daily spraying of the nose and throat of that class with proper antiseptic solutions for two weeks would probably end the malady. If not, it would place these organs in a better condition if the disease became inevitable. In the event of a case of diphtheria, for example, in a home where there are from six to a dozen children, prompt isolation and the daily or t. i. d. spraying and cleansing of the others would do more than any fumigating process ever practiced.

ROENTGENOLOGICAL AND CYSTOSCOPIC EXAMINATION OF CERTAIN ABDOMINAL DISEASES AT FIRST DIAGNOSED APPENDICITIS.*

By B. E. RHUDY, M. D., Abingdon, Va.

This paper is based on a series of cases, comparatively small to be sure, that have come under our observation during the last twelve months, a few of which I wish to report. They proved to be extremely interesting in every instance, have taught us some very impressive lessons, and have led us to the conviction, along with others, that diseases of the urinary tract, especially kidneys and ureters, are far more prevalent and account for more abdominal pain than we are accustomed to thinking.

The classical text book picture of pain beginning in the superior lumbar region, radiating to the lower abdomen and to the genitalia or thigh, is undoubtedly the most typical picture of renal colic; however, it is not appreciated how often this typical picture is absent; much less is it appreciated that pain

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arising from diseases of the upper urinary tract is often purely abdominal in type with no pain in the back whatsoever. Cecil, of Los Angeles, in reporting a review of 300 cases in which a complete urological investigation had been carried out on the upper urinary tract, found in a group comprising 67 cases with stone in kidney or ureter, that only 21 cases presented typical renal pain; that is to say, pain in the region of the superior lumbar triangle that tended to radiate down the course of the ureter. Nineteen cases presented pain in the abdomen alone. It is interesting to note that 28 per cent. of the cases of stone in kidney and ureter presented abdominal pain without pain in the back. When the pain was present in the lower quadrant, it occurred in the neighborhood of McBurney's point, if on the right side; and in the corresponding area, if on the left. The distribution of pain when in the upper abdomen was usually just beneath the border of the ribs, about the mammary line or a little mesial to it. In case the pain was limited to the epigastric region, it was described as a "deep in" pain and would not, ordinarily, lead one to think of a renal condition as its origin. In 26 cases, pain in the back was associated with pain in the abdomen, and in some instances was overshadowed by the latter.

In getting a history from a patient, we know of no more indefinite and elusive account than that given of the action of the kidneys and the relation thereto; therefore, we should always bear this in mind and no examination, in my opinion, is complete without a microscopical urinalysis, and, in case of females, the specimen should always be obtained by catheterization.

We are aware, of course, that in certain abdominal diseases other than of the urinary tract, we may expect to find leukocytes and red blood corpuscles in the urine, such as in acute post-cecal appendix tied down by adhesions, or tubo-ovarian diseases. On the other hand, a patient may give a history of bladder trouble with frequent and painful urination, which must be looked on with suspicion, as more accurate study of renal infection has led to the general knowledge that a large number of the many (especially females) suffering from symptoms of cystitis are really suffering from pyelitis, stricture of ureter, or both; or tuberculosis of the genito-urinary tract; and

that, when these are treated, the cystitis disappears. Formerly we were taught that calculus in the upper renal tract always caused blood in the urine, at least in microscopic quantity. More recent observation of long series of cases of renal calculus show that blood may be absent in from 14 per cent. in 150 cases reported by Cabot to 20 per cent. in 294 cases reported by Braasch and Moore.

To Hunner, of Baltimore, should be given credit not only for having aroused the interest of urologists but clinicians and surgeons as well, to making a more careful study of the renal tract and the significance of the urinary findings.

Only within the last six or seven years have we begun to appreciate that ureteral stricture may give rise to precisely the same symptoms and signs as ureteral or renal calculus, and that stricture and its sequelae must, therefore, be considered in attempting to diagnose the cause of obscure pain in the abdomen. Hunner believes that ureteral stricture is one of the most common causes of abdominal symptoms, especially in women, and that unrecognized ureteral stricture leads to more needless and fruitless abdominal operations than any other pathological condition. These operations in the probable order of frequency are for appendicitis, ovarian disease, uterine and pelvic disorders, floating kidney, especially the type with hydronephrosis, gall bladder investigations and abdominal explorations for intestinal obstruction and adhesions. In addition to the operations, there are prolonged treatments and rest cures for gastro-intestinal and other abdominal symptoms, treatments for sacral joint trouble and for sciatica. On the other hand, in dealing with a condition which occurs so frequently, if we are not constantly on our guard, we may persist in treating a ureteral stricture, after the symptoms due to it have subsided, and neglect to remove a diseased appendix or gall bladder which are crying out for attention; or we are liable to overlook a spinal arthritis or sacral joint disease; for they may come from the same source of infection that causes the stricture. In case of complete obstruction of the affected side, either from stone or stricture, there may be temporary absence of abnormal elements in the bladder urine. A patient with stricture or stone may show practically normal urine during the quiescent stage; whereas, an

examination during or just after a renal colic is likely to reveal leukocytes or red blood corpuscles, or both. The urinalysis probably does not help in differentiating these two conditions; furthermore, it may prove harmful to the patient, when the finding of a normal urine has diverted the diagnostician from further investigation of the urinary tract. However, when a stricture or stone is associated with infection, we rarely find a pure bacilluria, but usually a bacilluria with pyuria, and with these, most often, some red blood corpuscles.

There is little known concerning the etiology of these diseases. All of our patients were examined, as are the majority, as a routine, for foci of infections in organs such as teeth, tonsils and sinuses with very indefinite results in most every instance; that is to say, that to no one organ or focus can the credit be given as the origin of infection in a large percentage of the diseases of the upper urinary tract. Neither does the space of time nor the limit of this paper permit a further classification and discussion of the many lesions of the urinary tract or of the diseases of other organs of the abdomen.

No. 4635. Mrs. K. M., age 28. November 4, 1920. Complained of abdominal pains since age of 16; had no relation to periods; paid little attention to them until she married two and a half years ago. One year after being married became pregnant, then had uterine hemorrhage and aborted in four months. February, 1920, she aborted again. In spite of this, she felt well until July, 1920, when she developed fever, headaches and weakness with pain at lower right costal border. Temperature as high as 104.6; was ill for seven weeks, rising when fed anything; somewhat constipated. Kidneys said to have acted normally but had sensation of full bladder; convalescent by latter part of August. Has been under care of several physicians; their opinions varied from pulmonary tuberculosis to gall bladder disease and appendicitis; she was advised operation for gall bladder and appendicitis.

F. H. S. EXAM. Very well developed woman, not acutely ill, but on other hand suggesting chronic infection. Pulse regular, small 112 to the minute, blood pressure 102/80. Temperature febrile since admission to hospital. Lungs negative. Abdomen flat. Quite

tender at McBurney's point, but some tenderness over entire right side, especially bimanual palpation right kidney. Some slight pelvic involvement. Hemoglobin 80 per cent.; white blood cells 14,000. *Differential*: P. 82 per cent.; S. 11.5 per cent.; L. 6.5 per cent.; E. 0 per cent. (Average 200 cells.) *Urinalysis*: Straw colored, cloudy, acid, specific gravity 1.018, no sugar, albumen faint trace. Microscopical examination: Loaded with pus and motile bacteria; occasional r.b.c.; few squamous epithelial cells.

F. H. S., IMPRESSION. Chronic appendicitis; chronic pyelitis, bilateral. Wassermann negative. Referred for cystoscopy. Bladder, mucous membrane clear, both ureters catheterized and specimen submitted to laboratory. *Right kidney*: Considerable squamous and round epithelial cells, few leukocytes, r.b.c. and bacteria. *Left kidney*: Round epithelium, few leukocytes and r.b.c.

DIAGNOSIS: Low grade pyelitis, bilateral; received treatment. Discharged November 16. Improved to return in thirty days to check up results.

December 15. Patient has gained 8 to 10 pounds, feels much better, appetite good. Catheterized urine practically negative. Patient does not receive treatment.

April 1, 1921. Patient comes in on husband's request to check up on results. She has gained several pounds and is feeling good. History 3½ months' pregnancy. No urinary disturbance. Ureters catheterized; laboratory examination shows kidney practically negative.

No. 4463. Mrs. B. H. September 6, 1920. Age 34. General health good until December, 1918, when she had flu-pneumonia with abscess on left lung, and was confined to bed seven weeks. Since that, short of breath; otherwise well. Frequent attacks of tonsillitis; no rheumatism. Stomach trouble manifested by attacks of acute indigestion and pain, relieved by vomiting. No jaundice. Four years ago voided bloody urine for about three weeks; was pregnant at time. Menstrual periods normal, suffers worse with right flank at menstrual periods.

X-ray examination is negative for stone. Cystoscopy, bladder: urine quite bloody. Bladder: mucous membrane clear. Ureteral opening negative; unable to pass right catheter more than 2 cm. Uric acid crystals and

few leukocytes and r.b.c. **DIAGNOSIS:** Stricture right ureter. Patient did not return but went to Asheville, N. C., where she was cystoscoped and diagnosis of stricture of right ureter was confirmed. Returned for treatment, was able to pass No. 6 F. catheter and treatment of kidney was given. Discharged; improved after two treatments.

No. 4393. D. P., male, age 31. August 12, 1920. Admitted with diagnosis of chronic appendicitis with an acute exacerbation for last 24 hours. Complicating disease chronic urethritis. Prepared for operation. In meantime, urinalysis shows many pus and r.b.c. and crystals in urine; tenderness over right side. Operation called off. Referred for cystoscopy. Bladder negative. Unable to pass left catheter. Right is passed and shows r.b.c. and few pus cells. **DIAGNOSIS:** Stricture in vesicle wall. X-ray of renal tracts negative. Patient insisted upon going out to return for further treatment at own discretion. Has not returned.

No. 4308. Mrs. C. B., married, age 63, mother of eight children. June 11, 1920. Operated on November, 1919, elsewhere; appendectomy, releasing adhesions, taking up ligaments of womb and repair of perineal tear. Complains of pain in lower abdomen of 15 years' duration; no relief from operation, symptoms being about same as before. No nocturia; day frequency one to three hours; dysuria only for past few days. Thirty years ago passed gravel size of "pheasant's egg" and several smaller ones. Fifteen years ago she felt sensitive lump in left side, at times filling almost entire space between costal arch and crest of ilium. Three weeks after appendectomy patient had extreme pain in left side. Has not noticed any gross blood in urine since she passed stones from bladder. Physical examination does not reveal lump in side. Catheterized specimen of urine shows few r.b.c., 20 to 25 pus cells to field and teeming with bacteria. **IMPRESSION:** That of left ureteral obstruction or spondylitis, lumbar region, favoring latter. June 16th, referred for cystoscopy and X-ray examination lumbar spine. Bladder negative. Ureters negative. Separate kidney function. Right showed up in ten minutes 8 c.c., in fifteen minutes, 3 per cent. Left showed only mere trace. Blood, pus, bacteria and hyaline casts. Roentgenograms before injection negative for stone; also spine negative.

Injected kidneys and pyelograms made. Right apparently normal. Left did not fill; no evidence of dilated ureter.

On June 25th separate function right kidney 80 c.c. in 15 minutes, 7.5 per cent. dye. Left, 12 c.c. in 15 minutes, 1 per cent. of dye. Diagnosis made of cystic degeneration of left kidney. Discharged to return in three weeks for left nephrectomy. Admitted July 20th. Separate kidney function; right 45 c.c. in 30 minutes, 20 per cent.; left 17 c.c., 1.5 per cent. Pyelograms left dilated pelvis, calices destroyed. Operated July 21st. Left nephrectomy, small degenerated and cystic kidney with small stone imbedded in large cheesy mass obstructing ureter. Satisfactory recovery. Patient visited in hospital ten days ago, states she is feeling fine except for some rheumatic pains in back and shoulders.

No. 4801. Miss E. B., age 22. December 20, 1920. Complicating disease: Chronic tonsillitis. Admitted with diagnosis of chronic recurrent appendicitis, which diagnosis was concurred in as the only active disease until catheterized urine was found loaded with pus and bacteria. Referred for cystoscopy; bladder mucous membrane, pale; urine quite cloudy—subacute cystitis. Ureteral openings negative. Each ureter catheterized easily. Specimen to laboratory. Right shows abundant pus cells and few bacteria. Left comparatively negative. Blood: white blood cells 11,400. P. 70 per cent.; S. 19 per cent.; L. 8 per cent.; E. 2 per cent. X-ray examination not made. After four pelvic lavages and injections with AgNO_3 solution, there remains considerable pus on right side. Still has some shifting pains in right side; left negative.

Appendectomy January 10th. Post-cecum appendix fixed by adhesions and rigid over distal third. Cryptic adherent tonsils containing some cheesy material were removed on January 20th. Discharged February 12th, convalescent. February 27th, 2 a. m., patient suddenly developed nausea and vomiting followed by intense pain in right lower chest or right upper flank. Doctor was called and gave hypodermic. Pain severe, temperature rising sharply, and patient looked acutely ill. Slight bladder disturbance and mother says urine is high odor.

F. H. S., **EXAM.** on consultation. Patient acutely ill; any movement very painful; vomits frequently; eyes sunken; no cyanosis,

dyspnea nor jaundice. Face not flushed, no respiratory hurry, and no cough. Skin hot and moist. Pulse regular, 120; blood pressure not taken. Temperature 103 F. Chest negative for pneumonia or pleurisy. Abdomen slightly distended, quite tender over right kidney region and mass is felt.

Urine: Light amber color, diffuse cloud, albumen a trace. Microscopic, not centrifuged, probably 50 pus cells to low field, numerous bacteria, no r.b.c. or casts.

Blood: White blood cells 34,400 per cm.m.; Dif: P. 85.5 per cent.; S. 10 per cent.; L. 4.5 per cent.; E. 0 per cent. **IMPRESSION:** Obstruction of upper right urinary tract with sepsis. Advised to enter hospital. March 1, 1921, patient admitted to hospital. X-ray examination shows stone (size of small chinquapin) in pelvic portion of right ureter. Left negative. Cystoscopy: Right ureteral opening gaping, inflamed surrounding mucous membrane. No. 6 F. catheter passed easily, apparently all the way to pelvis, did not feel touch of stone; very little urine collected. **IMPRESSION:** No hydronephrosis. Kidney injected with AgNO_3 solution. Laboratory reports numerous pus and r.b.c. and motile bacteria. Patient showed some improvement next few days in temperature, pulse, etc.

March 12th, roentgenological examination shows no change in position of stone. On the 14th, cystoscoped. Catheter passed to stone in pelvis; unable to get by this point. Only two or three drops of clear looking fluid obtained. Injected with AgNO_3 solution. **IMPRESSION:** Complete obstruction with suppression of urine on that side. March 23d, temperature normal for three days. March 24th, pyelotomy, right, stone size small chinquapin removed from pelvic portion of ureter which was causing obstruction. Kidney showed evidence of swelling and inflammation. Satisfactory recovery from operation. Discharged April 18th.

The chief points to bear in mind are: that the history to begin with may be misleading in any abdominal condition; the physical examination, very important to be sure, may not be altogether satisfactory, especially where there is extreme tenderness and the muscles of the abdominal wall are tense; the urinalysis of a specimen obtained from the bladder does not aid, ordinarily, in differentiating diseases

of the renal tract (excluding conditions that are usually classified as purely medical).

Our experiences along with the experiences of others have taught us the lesson that, with the most careful use of the methods that are available by which to locate the pathology, to analyze its character, and to outline its best form of treatment, in a large percentage of abdominal cases roentgenological as well as urological methods of diagnosis are indispensable. These, to obtain the maximum information in the order of their simplicity and freedom from annoyance to the patient, are: X-ray examination; cystoscopy and catheterization of the ureters with their various accessory methods of investigation, such as separate functional test of the kidneys, the use of the wax tip, wax bulb and other instruments for locating and treating an obstruction or foreign body; also, the use of the X-ray catheter and shadowgraph materials combined with pyelography.

A positive roentgenogram is of great value in any case. A negative X-ray examination alone, in my opinion, is liable to be misleading in many instances if we depend upon the unassisted roentgenogram to decide whether the symptoms are due to a lesion of the urinary tract, as it is estimated that from 15 to 30 per cent. of ureteral stones do not show in roentgenogram, either because of their composition or location, or both; or they may fail to show because of some faulty technique in making the examination.

Cystoscopy, alone, may or may not be helpful, as the only cystoscopic picture diagnostic of ureteral stone is to see the stone partially extruding from the meatus, or in the vesicle portion of the ureter just within the distended open orifice. Therefore, we must admit that cystoscopy *per se* is of little value in making a diagnosis of ureteral disease, and of no aid whatever in disease of the kidney. We must still go further by catheterization of the ureter, putting to use its various accessory methods of investigation which may positively indicate further X-ray examination, such as pyelography or roentgenography with retained shadowgraph catheter or sound.

The present status of the roentgenologist or urologist which tends to place him aloof in his specialty and separates him from general abdominal diagnosis is unfortunate. He should be closely associated with the internist and

surgeon and they should be similarly associated with him. The ideal status would be to have the roentgenologist, urologist and internist to work as a unit in every case with abdominal pain which is not definitely identified by general physical examination.

SOME OBSERVATIONS ON THREE THOUSAND CASES OF VACCINATION IN THE PAST YEAR.*

By CLAUDE MOORE, M. D., Roanoke, Va.

It has been my good fortune and opportunity to vaccinate some 3,000 persons in the past year in the city of Roanoke; to be exact, 2,671 school children and about 300 other citizens. In doing this number one naturally learns considerable, but also unlearns a number of previous ideas. In this short paper it would not be opportune to discuss the history of vaccination, nor any of the arguments for or against its use, but it would be interesting for you to know the large number of articles that are being published in our lay magazines, particularly physical culture ones, against vaccination, possibly due to the non-serious manner and method that the profession has assumed.

In vaccinating, one must remember that the amount of immunity must not be judged by the size of the vaccination pustule nor scar. One of two methods, as recommended by the U. S. Public Health Service, is advisable. All procedures must be under strictly aseptic conditions, with especial care to use some volatile antiseptic to cleanse the skin. To get a good take and yet not a large one, after the arm has been scrubbed with alcohol gauze, a drop of the virus is put on the spot, and three or four scratches about one quarter of an inch long should be made through the virus and parallel to each other. The scratches with a sharp needle should not be deep enough to draw blood, else the virus will be washed out of the groove made with the needle. Cross scratching and scarification should not be done for the same reason. Too deep a scratch will act like a well and flood the virus out with blood. A light scratch can be easier made if the skin is held taut across the arm with the other hand.

A better method is not to scratch the skin at all, but use the needle hypodermically. Go

through the virus at an angle almost parallel to the skin, very superficially, giving the needle a twisting motion, but not deep enough to draw blood. All punctures should be made in a circular area a quarter of an inch in diameter. Most important of all, do not put any dressing over the area. Vaccination seems to the physician such a small thing to do for a fee that he does more harm than good. If a dressing is applied, sweat and other secretions of the skin get under the bandage, excoriate and macerate the arm, and increase secondary infection. From my observation, 90 per cent. of the vaccinations done in physician's offices have a bandage put around the arm. Customary bathing and washing should be continued after the first twelve hours, but care should be taken not to break the vesicle, soften the crust, nor damage it so that the pus will run. If at the time of vaccination the arm is allowed to dry, the virus with the lymph will form a glazed dressing over the scratch, or puncture, and any danger of infection is practically negligible.

The principal reason why such a small number of "takes" result in the casual vaccinations of physicians is the carelessness of obtaining the virus. In examining the stock in several drug stores, I found two that were out of date. Few physicians are particular about using it immediately after taking it off ice, and vaccinate with it on successive days, after carrying it in their satchels or pockets, and expect results. Of all the vaccinations that I have seen done by physicians in the past year, I believe that over 40 per cent. have not taken. In one of my schools checked up, where 240 were vaccinated, only 12 did not take, a failure of 5 per cent., where the correct method was used. Of course, 240 cases are not many from which to form a definite conclusion, but of the 3,000 done, the percentage of failures would not vary far from the above figures.

In discussing the indications for vaccination, there is practically no age or condition when it should not be done, if the person has been exposed. If he has an old vaccination scar that will protect him against smallpox, a second take is not possible, and, if it is sufficient, we do not know it until a re-vaccination has failed. All persons exposed to smallpox should be vaccinated immediately. The incubation period of vaccination is so much shorter than smallpox that the former will take before the

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latter develops, provided the inoculation of both was approximately at the same time. Only this spring I saw a family where the father developed smallpox with a definite rash. Immediately, the mother and nine children were vaccinated and all except the oldest had nice "takes." About ten days later he had a definite case of smallpox, and, on close questioning, I found that immediately following vaccination he had scrubbed his arm with soap and water to prevent a "take," for fear his arm would get sore and he would be longer away from work. None of the remainder of the family became ill.

In my opinion, there are only two classes in whom vaccination is contra-indicated: first, those who have had well developed cases of smallpox; second, those who have some kind of skin lesion, in which the virus may get spread, and thereby cause very large or multiple vaccinations. Even the latter is no contra-indication when the person has been in direct exposure to smallpox. Vaccination should be done at six months of age and repeated at six years, with additional vaccinations whenever there is exposure.

In the last year, I have been impressed with the difference in reaction between children and adults. Many of the former do not lose a day at school, their arms seldom get more than moderately sore, nor the ulcers over half an inch in diameter. The constitutional reaction is less than in grown-ups. If vaccination is continued in the future, it is only a question of time until such a natural immunity against smallpox is developed from generation to generation by inheritance, that successful vaccination will be a matter of record rather than among the present day facts.

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A BRIEF OUTLINE OF SOME EYE CONDITIONS IN CONNECTION WITH GENERAL DISEASES.*

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In selecting the title for this paper, the writer had in mind the relation of interest that exists, or should exist, between the practitioner of general medicine and the doctor limiting his field to the consideration of those

troubles that, directly and indirectly, have to do with the eye. To this end, he has chosen from the vast number of general diseases that may affect the normal state of the eye, and whose presence in the human system may be suggested or made plain by certain conditions of that organ, a few of the more strikingly important to both specialist and general physician. Originality is not claimed; on the contrary, due acknowledgment is made for opinion and quoted experience of various authors.

The connection between eye disease and general pathological conditions is so far-reaching that more than a limited consideration is impossible here. The following classification, with one example from each class, therefore, suggests itself and is presented in the hope of mutual help and interest:

1. Diseases of the Nervous System.....Tabes Dorsalis.
2. Infectious Diseases...Smallpox.
3. PoisonsAlcohol.
4. Diseases of Glands with Internal SecretionExophthalmic Goitre.
5. Diseases of the CirculationArteriosclerosis.
6. Diseases of the Respiratory Tract...Tonsils.
7. Diseases of the Digestive Tract....Teeth.
8. Diseases of the KidneyNephritis.
9. Diseases of MetabolismDiabetes.

1. **TABES DORSALIS.** In this disease the pupil, the ocular muscles, and the optic nerve are all affected. Certain changes in the pupils may be regarded as among the earliest symptoms, appearing even before the shooting pains, occurring in probably 90 per cent. of cases and sometimes antedating by years any other evidence of tabes. These changes involve gradual loss of light reflex, the reaction becoming first sluggish, then markedly slow, finally complete; usually bilateral but occasionally monolateral, in which case it is of equal diagnostic value. There may be inequality in the reaction of the two pupils or distortion in shape of one or both. The Westphal-Piltz reaction, in which pupils narrow on sudden closing of lids and dilate when lids

*Read at meeting of Southwestern Virginia Medical Society in Pulaski, May 11 and 12, 1921.

are opened, is often observed, but this is also associated with other pupil disorders. Consensual reflex is equally affected. Both it and sensory reflex are lost early in or preliminary to tabes.

There is decided contraction of pupils on convergence, this being pronounced even in myopic eyes. Narrowing on convergence, with absence of light reflex—the Argyll-Robertson pupil—is strongly suggestive of tabes, since this phenomenon occurs in only two other diseases, paresis and syphilis, but always it may be found in the first stages of tabes.

Many cases of this disease are forecast by paralysis of the external eye muscles, this condition appearing before any other symptom. However, it may become manifest at any other time, the paralysis being transient, or of a few days' duration in the early stages, but, if of late development, it is apt to be permanent.

Ptosis with midriasis and absence of light reflex on one side, the other eye remaining normal, may occur, but this is not usual. Tabetic paralysis constitutes about 20 per cent. of ocular muscle paralyses, the origin probably being nuclear. The third nerve is oftenest affected, though the fourth and sixth also share in the derangement. The optic nerve is early involved in the course of tabes, usually bilaterally slow in progression, gradually continuing to complete blindness. On fundus examination, the nerve head is in the beginning found to be grayish, later grayish white, finally white. The changes occur first on the temporal side, but gradually extend over the whole disc. The field of vision is affected as the trouble spreads, central vision being lost first with peripheral contraction, the color field for green and red preceding loss for other colors. In some instances central vision is retained as in glaucoma while there is concentric contraction, or there may be central scotoma enlarging to include the blind spot and becoming absolute. If there is a tabetic lesion in the chiasm there will be bi-temporal hemianopsia. This may, however, be also an evidence of cerebral syphilis.

2. **SMALLPOX.** Smallpox being every year locally epidemic in Virginia, especially in the Southwest, it seems appropriate that we might well emphasize the care of the eyes in this malady. It is stated that, before vaccination was generally introduced, fully 35 per cent. of

all blind lost their sight from smallpox. The percentage, while greatly reduced, is not negligible today. Not only are the conjunctiva, the lids and the lachrymal apparatus involved in the processes, but the cornea, through secondary infection, as well. Corneal abscess and choroiditis, retinitis and even optic atrophy may occur, as well as gangrene of the lids. Erysipelas is another sequel in secondary infection. All these usually occur in severe cases of the disease with low bodily condition. The necessity for prevention of these sequelae by proper prophylaxis in expectant treatment of the eyes during an attack of smallpox is obvious.

3. **ALCOHOL.** The eye is more frequently affected by alcohol than by any other poison. Formerly ethyl alcohol poisoning was oftener met with; recently, the violent methyl alcohol poisoning is common. The former is due to habitual use of brandy, whiskey or other spirits of similar potency, wines and beer seemingly never being responsible for toxic amblyopia. The symptoms are gradual visual disturbances, the trouble being progressive, but very slowly so, often extending over months and years with occasional remissions and rarely going on to complete blindness. It seldom occurs under 35 years, never under 20. Cessation of the cause results in steady improvement with final recovery if amblyopia is not too far advanced. Fundus examination here shows partial atrophy of temporal side of disc, the nasal half pale but not atrophic. In some few recent cases, the whole disc will be found hyperemic. Visual field changes are typical, the periphery being unaffected while a central relative scotoma is always present and the condition always bilateral. The scotoma is oval, extending toward the temporal side. On the other hand, methyl alcohol causes sudden and complete loss of sight. There may be slight improvement after a few days, but this is only temporary and rapid return of blindness occurs. Pupils are dilated, immobile, and movements of eyeball are painful. At first, the ophthalmoscope shows an acute neuritis; later, nerve atrophy. In mild cases, the prognosis may be tentatively hopeful, but is nearly always bad. Most cases go to permanent blindness if the poisoning has been severe.

4. **EXOPHTHALMIC GOITRE.** Given tachy-

cardia, struma and exophthalmos, one may be reasonably sure of Basedow's disease.

The exophthalmos is ordinarily bilateral, but now and then one-sided, in which case it is usually the left; varies in grade and at times. The eye can easily be pressed back into the orbit. Pressure on facial veins will cause eyes to protrude further. Eyes project straight forward, motility not restricted. Widening of palpebral fissure (Dalrymple's sign) is due to retraction of the lids and not to protrusion of the eye ball; not equally present in both eyes.

Graefe's symptom is a lagging behind of upper lid on looking down and a relatively more rapid movement of upper lid than eye on looking up. This disturbance of association movement is due to increased tonus of levator palpebrae muscle. Lessening of reflex closure of lids, or Stellwag's sign, is an interesting symptom in this disease, the act taking place only every few minutes in contradistinction to the normal 8 or 10 closures to the minute. In Basedow's disease, convergence is insufficient—Moebius' symptom. These symptoms, in connection with the rapid heart and the struma, make a picture typical of exophthalmic goitre. In addition, there may be various corneal lesions from exposure, toxic action, infection and necrosis.

5. **ARTERIOSCLEROSIS.** In arteriosclerosis, the vessels of the eye share in the general condition, as a rule, though some authorities report many cases of the disease in which the vessels of retina, choroid, and iris remained apparently unaffected. But in every case in which the large cerebral arteries are distinctly involved, the retinal vessels especially show unquestionable changes, and the probability is that even mild involvement gives correspondingly slight evidences of the disease in the retinal arteries, such as moderate tortuousness, change in calibre and increased light reflex. In well developed sclerosis, the ophthalmoscopic picture is about as follows: The arteries are twisted, very much narrowed, with occasional areas of dilation, the central light streak quite narrow and bright, with a lighter than normal appearance over entire width of artery. The veins are engorged, indented where crossed by arteries and often crowded to one side, the crossing artery losing its translucency. Oedema of the retina, due to slow venous flow, may be easily marked, the red

fundus reflex being entirely lost in a grayish haze. In some instances, hemorrhagic spots may be seen along line of vessels. The significance of the "silver wire" arteries, with their corkscrew-like twisting, irregularity of calibre and general diminution of size, and the full veins, flattened where arteries cross, with peripheral dilation, is apparent, since they are a part of the picture of cerebral vessel hardening. Choroidal vessels are undoubtedly affected, but not being end arteries they do not indicate condition of cerebral arteries. A mild inflammatory state of the iris is comparatively common, being accompanied by tortuous veins. In more severe cases, these conditions are intensified to the point where minute hemorrhages into the iris tissue take place. When brain vessels are involved, lesions of the optic tracts may occur with central visual disturbance.

6. **TEETH.** From diseased teeth may come such a long train of disorders, that stress should be laid upon advice from every physician to every patient as to the far-reaching consequences that neglect of the teeth may entail. And the eyes are no more exempt from such menace than are any other organs. There is hardly a day that does not bring to light some instance of this truth, as any eye man can testify. For example: A patient with red, swollen lids, chemosed conjunctiva, eyeball protruding, its movements limited, and all other signs of cellulitis going on to abscess, will be found to have an infectious process at the root of a tooth, with an extended superior maxillary periostitis reaching the orbit. Pus forming here may flow around the eyeball and escape through the palpebral fissure; or the inside of the eye may become involved in the infection with a varying degree of destruction; or the whole eye may be affected, panophthalmitis resulting; or the blood vessels may carry the infection from tooth to orbit or to any of the sinuses, resulting in thrombosis of one or both central vessels, with rapid blindness following. If not this acute trouble, the ocular diseases arising from chronic poisoning in root infections and pyorrhea are many, as either can cause inflammatory condition of any part of the eye.

Perhaps all cases of so-called rheumatic irido-cyclitis may be traced to diseased teeth or tonsils, as may the vast preponderance of

neuralgias of the eye and the orbital region. Have all cases examined for pyorrhea and X-ray used for information as to root infection. Bear in mind the fact that superficially teeth may appear O. K., there may be no soreness, swelling of gums, nor any other symptoms, and still infection may be present. The cleaning up of all foci of infection cannot be too strongly insisted upon.

7. TONSILS. What has been said of the teeth may well apply to the tonsils also, though perhaps in somewhat lesser degree. The diagnosis of diseased tonsils is not always simple, especially in the submerged variety, as the foci of infection are hidden, becoming apparent only after the tonsil has been removed. The most innocent appearing tonsil frequently harbors a nasty pus pocket from which is drawn infection deleterious to the whole body economy, while the large, lobulated, unhealthy looking organ, from which pus may be easily expressed, causes less trouble because of drainage. Care should be taken before excluding the tonsil as causative agent in cases of bulbar conjunctivitis which persists, episcleritis, optic neuritis, paralysis of ocular muscles and other conditions. Cases are on record of development of acute retro-bulbar neuritis after tonsillitis, and the same sequelae in central vessels may arise from tonsils as from teeth.

When tonsils are involved, nothing short of radical treatment has any value.

8. NEPHRITIS. Not long ago, a man, aged 52, visited the writer's office, stating that he had for the past few weeks been troubled with wavering, blurred vision and that he thought his glasses needed changing. His history elicited the fact that for six months he had had "indigestion," slight shortness of breath, headaches and inability to "see things long at a time," as he expressed it. The objects in line of vision would be seen plainly for a moment, then blur and fade away. He stated upon question that his family doctor had examined his urine a few days previously and found the kidneys all right.

Fundus examination of this patient showed marked venous congestion, the disc sharing with the retina in a general hyperemia; arteries narrow, only faintly visible, with dim white lines; retina hazy with dull red color. There were a few flame-shaped hemorrhagic spots near which were white areas. This man

was referred to an internist, who reported casts and gave a diagnosis of well advanced nephritis. This case is mentioned to bring out the signal importance of fundus examination in cases presenting such symptoms. In nephritis, the eye is affected in several ways. Oedema of the lids is a frequent feature, being present for a few hours or days at a time, then disappearing for a period to return later. The conjunctiva is not affected, though subconjunctival hemorrhages sometimes occur. Retinitis is, of course, the most important condition. Its significance lies in the fact that it is often the earliest manifestation of activity in a disease previously latent. In those insidious cases associated with contracted kidney, the only general symptoms digestive disturbance and headache, with plentiful urine of low specific gravity, the sufferer may consult an oculist first on account of visual derangements, in which event the diagnosis of nephritis may be made by the fundus picture as above described.

In the later stages there are increased hyperemia and evidences of fatty degeneration of retinal tissue, appearing as white spots, sometimes large, and surrounded by small white or yellowish dots. Occasional small hemorrhages may be seen along the course of the vessels.

Around the macula may be seen spots that look like spattered white paint, arranged oftentimes in rows to form a star-shaped figure. Advanced typical cases present blurred, hazy disc, tortuous veins, narrow arteries with faint light streaks, flame-shaped hemorrhages and a stellate white figure at the macula.

9. DIABETES. The pathological influence of this disease on the eye is marked. Among the most common and important are changes in refraction. Hypermetropia may rather suddenly and quite steadily increase, while, on the other hand, there may be rapid onset of myopia. When this occurs in those past middle age, diabetes is very likely present. The change is probably due to increased refraction index of lens, supposedly caused by the presence of sugar. A still more frequent occurrence is a contraction of the range of accommodation, occurring in all grades of the disease. Frequent change of reading glasses is necessitated thereby. If the disease responds to treatment, this inability to accommodate rapidly disappears. Iritis is frequent,

usually mild, though sometimes it may be severe, with fibrinous exudate and hypopyon. Cataract is common in diabetes of all ages. In the old, the opacity generally begins at the nucleus; in younger persons under the capsule and usually bilateral, presenting at first a bluish cast, the deeper parts remaining clear but later also becoming opaque.

Operation for these cataracts offers as good prospect for successful results as in non-diabetic cases, though it is said iritis more often follows. The fundus changes are striking and may be said to be typical of the disease. The disc remains normal and the retina presents no inflammatory lesion. There are seen, however, groups of small glistening white spots chiefly around the nerve head, which may take the form of twisted streaks, half rings or irregular figures, but never the star shape of the figure in albuminuric retinitis. There may be many punctate hemorrhages, though the vessels themselves show no change; or large hemorrhages into the vitreous, resulting in opacities, with connective tissue formation later, and development of new blood vessels in the vitreous. In long, protracted cases, where general health has been undermined, retro-bulbar neuritis may occur from toxicity. Ocular paralysis may also be an accompanying feature. Therefore, diplopia should always suggest urinary examination.

THE NURSING SITUATION IN VIRGINIA, AND THE NECESSITY FOR REVISION OF THE TRAINING COURSE, FROM THE VIEW-POINT OF THE PHYSICIAN.*

By J. ALLISON HODGES, M. D., F. A. C. P., Richmond, Va.

The present lack of an adequate number of nurses in Virginia brings us face to face with an almost tragic reality, and, from accounts received, the conditions which prevail in this State are the same that obtain generally all over our country. The problem is a serious and vital one, and interests alike the public and the professions.

The nurse has now become even more of a

necessity than ever before, due to the changed economic and sociological conditions resulting from the recent World War, and, since this decrease in numbers has occurred despite the great increase in population during the same period, and as it seems likely that State medicine in one form or another is coming, and that to meet this emergency of lack of both physicians and nurses, the U. S. Public Health Service and the city departments of health, throughout the country, will be widely expanded, and in doing this will still further utilize all present medical and nursing facilities available, it is urgently necessary that all possible means be taken to protect and guard the public welfare at the present time, and, especially, to increase the number of nurses for the assistance of the general practitioners of medicine in this State.

The tension existing in professional circles because of this shortage, especially of graduate-private-duty and hospital-pupil nurses, is now almost as acute as during the war, and is not improving, as had been thought probable.

This shortage of nurses is in part comparable to a like shortage of doctors in the entire country, but not directly due to a decrease in the number of training schools for nurses, as has been the case in the decrease of medical schools. Unquestionably, the decrease in the number of medical schools within the past fifteen years from 160 to 82 in number, and the consequent decrease of medical students from 28,000 to approximately 12,000, is in part the cause of the shortage of physicians, but,

In the case of the nursing profession, this is not true, for there has been, on the other hand, a large increase in the number of hospitals throughout the country, especially private and community hospitals, and apparently there should have been also, an increase in the number of nurses graduated annually. This increase in the number of hospitals, however, has been within a comparatively recent period, and sufficient time has not yet elapsed to insure an increase in graduate nurses, and many of the new hospitals and also old ones, which have made additions, have called upon the graduate nurses to fill the positions ordinarily occupied by pupil nurses, of which there has not been a sufficient number to supply the vacancies. Taken as a whole, consequently, the nursing situation has not improved, but in this State is becoming more acute, and causing physicians

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and those interested in public welfare consequent anxiety and uneasiness.

This growing demand for nurses is, however, a distinct compliment to their recognized ability and efficiency, and has necessitated thoughtful inquiry as to the causes of the present shortage of nurses, and the best possible remedy to meet it. When it is remembered that training schools for nurses have been established but forty-eight years in the United States, and have graduated 150,000 nurses, the success of their work is as remarkable as it is commendable, and it is evident that the present shortage is due to a variety of causes produced by conditions, both within and without the limitations of the professions of medicine and nursing.

The main causes of shortage of nurses are:

1. The specialization and selections of the graduate nurse, as follows:

a. By limiting nursing to certain selected diseases, such as obstetrical cases, surgical cases, etc., and *against* T. B. cases, contagious diseases, etc.

b. By limiting work to certain specialties, such as anaesthetics, dietetics, office nurses, dentists' and physicians' assistants, etc.

c. By limiting work to institutions, such as hospitals, in official positions; boarding and public schools, as institutional nurses; factories, as industrial nurses; dispensaries, as maternity nurses, and all forms of social service work, etc.

d. By limiting work to Public Health Service of various kinds, to the army and navy, to the Red Cross and other branches of service, and

e. By limitation of service because of marriage and of cessation of active work, after an average period of eight years of public service.

2. The limitation of the nursing sphere, as follows:

a. By limiting work only to hospital-private cases.

b. By selection of only day or night work.

c. By doing only city or country work.

d. By working only in certain homes, providing certain comforts.

e. By working only limited hours, on private duty, and

f. By remaining in the city in which the nurse graduates.

3. The length of time required to secure a diploma, exactly the same number of calendar months being now required for graduation of both doctors and nurses.

4. The constant development and extension of the courses, thus making the scholastic requirements unduly excessive in comparison with the practical methods taught.

5. The contrast with other professions and vocations which provide as much remuneration, with less time in preparation.

6. Financial returns quicker from other vocations which require less arduous service for preparation.

7. The war-demands, which gave the opportunity to many absolutely untrained nurses, to take up the work, and to continue it, most of them with no more training than could be obtained, simply, by walking through the wards of a hospital.

8. A decline in the true professional and humanitarian spirit.

9. Restlessness and lack of interest of some graduate nurses, and temporary removal of others from the State.

10. Lack of hospital comforts and recreational diversions for pupil-nurses, while in training, and lack of proper comforts and treatment in some private homes.

11. Lack of individual interest and of continuous and co-ordinated courses of study by the most competent instructors on some of the hospital staffs.

12. Possible inadequate, or unjust basis of remuneration of pupil-nurses, for services rendered as private-duty hospital nurses.

13. Existing sociological and economic conditions, dependent in cities upon overcrowding of population and life in apartment houses; and in the country, upon insufficiency in number of domestic assistants, and

14. The constantly decreasing number of entrants, as well as graduates, in both the allied professions of medicine and nursing, which has had the natural tendency to foster the spirit of individualism, and to cause undue specializations and the resultant feeling of a professional power, which has furnished some excuse for its abuse, regrettable as this is, for while "it is well to have a giant's strength," 'tis tyrannous to use it."

The above-named causes, and probably others, have produced the following results:

1. A scarcity of private-duty graduate nurses for the use of the general public.
2. An increase of undergraduates and correspondence school graduates.
3. An increased expense to certain semi-invalid patients in hospitals, because most of the hospitals have not had sufficient nurses to perform the usual floor duties.
4. The necessity of extra nurses on other cases, because of these conditions.
5. Probably depreciation of standards, because of the exigencies of the present times.
6. A possible commercialization of the profession by some nurses, and
7. The danger of radicalism from those who have felt the results of these conditions, and may wish to institute legislative action which might endanger the present legal status of the nursing profession, as well as that of medicine.

GENERAL BASIS OF SOLUTION OF THE PROBLEM.

It is entirely evident that many of the causes, as well as some of these results, cannot be obviated nor prevented, nor are all of them to be considered derelictions, in whole, of all of the graduates of either medicine or nursing, for, of course each individual has every legal right to specialize and select individual work, and, as to the civil responsibilities and consequences for this, each must be personally the judge, and under any circumstance assume the responsibility, even if at times it be uncomfortably onerous or deleterious to the majority of all concerned. In other words, professional ethics and the interests of the general public should always be considered, as well as the individual preference of the practitioner, be it of medicine or nursing. The individual act, of course, does not always represent the practice of the majority of any profession, though individual action may sometimes be practically very harmful to the profession represented.

In attempting to reach a practical basis for solution of this question, it was decided to interview by letter a number of physicians, and also to consult with the presidents of the different nursing organizations in the State, and to this end a letter was sent to the presidents of sixty local medical societies, and, as it was thought that their personal opinions would be representative of the profession of the section

in which they lived, they were requested to give their opinion as to the course of training for nurses on the two following points:

1. The wisdom and apparent necessity of reducing the period of nursing education to a two-year curriculum, for applicants with a high school diploma.

And if this could not be effected.

2. The wisdom of establishing, through some State agency or otherwise, a school for giving an intensive but limited course in practical nursing, with no diploma, but a certificate as trained or licensed attendant.

In reply to this questionnaire, sent to sixty physicians, forty-two answers were received and a summary of the opinions is as follows:

1. Two physicians disapproved of both alternatives.
2. Forty approved of some general method of reducing the course of training in some way to meet the present necessities.
3. Thirty-four recommended a specific reduction of the three-year term to a two-year curriculum, a small proportion advocating an ordinary grammar school education as a preliminary preparation, and the rest preferring a high school diploma as a preliminary educational requirement.
4. Thirty-nine approved, and the great majority urged the establishment of the course for trained or licensed attendants.

Other suggestions were made as follows:

1. That all nurses who make a combined average of more than 75 per cent. in Class "A" hospitals, be graduated at the end of two years, and that those who fail to make this grade be given an opportunity to graduate at the end of two and a half years, and that an official commissioner be appointed to grade all hospitals maintaining training schools.
2. That the nurses' legal status for graduation be similar to that of druggists, and registered assistant druggists, with lower salary for the latter.
3. The reduction of the term of training for a high school graduate to two and a half years, and the establishment of an intensive short course in practical nursing for those who have not this educational qualification, the two courses not to be given in the same hospital.
4. The initiation of a two-year curriculum for graduate nurses, and also the establishment

of some central organization, State or otherwise, for intensive training, but both classes of nurses to have distinct uniforms, and a difference in salary.

PERSONAL RECOMMENDATIONS.

The future training schools for nurses must be made so attractive and so satisfying that the high school girls who have been taught the value and vision of personal service will be imbued with the idea of nursing as a career, and, if this is done, the handicap to both private and public health nursing, because of lack of nurses, will be removed.

If a nurse is educated before she comes into a training school, she should receive a credit for this, and surely, in the future, there will be for such nurses an academic reward, by allowing them to earn both their combined nurse and specialist degrees in a shorter period of time.

The past education of the nurse in training schools, like that of the doctor, has had a great deal of padding in it, and in the future rearranged course the useless must be eliminated and all schools put on an educational basis, rather than on the old idea of apprenticeship in the hospital.

Sir James MacKenzie, the great medical philosopher and brilliant general practitioner, in speaking of medical education, and the same applies with equal emphasis to that of nursing, says: "It is far better to be trained to understand a few matters thoroughly than to have a superficial knowledge of a great many things."

Ideally, I would prefer to see established a central State Nurse Training School, where pupils educated in the State public school system could continue their professional courses, on terms and a combination of courses similar to those prevailing in other State institutions, such as normal colleges for teachers, etc., for the necessity for nurses is almost as great as for teachers, but I know at this time that this method is difficult of practical realization. The whole matter of nurse training now must be reduced to a practical working basis to supply a demand which is insistent and increasing, and a plan must be evolved that will *educate* first, and afterwards *train* pupil nurses in the best possible manner.

This, then, practically resolves itself into a curriculum that will be instructive, and will, in a measure, teach the pupils by clinical methods

more largely than in the past, just as medical students are taught to observe, to think and to apply their knowledge. This will require special teaching facilities that can be easily provided in an adequately equipped general hospital where the pupils can observe and study personally the conditions and disease-expressions of the more common illnesses as they exist in everyday life.

This will mean the elevation of teaching standards over the old method, where a nurse's labor was put above her instruction, the nurse, consequently, becoming only a by-product of the institution.

With this reorganized method of putting foremost the nurse's training, it is believed that an enthusiasm would be evoked which would result in a large increase in the number of nurse entrants into the profession.

To obviate, then, the past faults of the present system, and to meet these new requirements, my personal recommendations, after thoroughly studying the proposition from all angles and feeling that, in order to get results that will be permanent and beneficial, we must "give and take" without lowering the standards in any way, but rather advancing them, are as follows:

1. The institution of a two-year revised and reorganized course of training for students of good moral character, and more than eighteen years of age, presenting credentials of not *less* than *two* years of high school education, or its equivalent, thus putting a premium on "preparedness," by the subtraction of the third year of the professional course, and the addition of one year, at least, to the scholastic course.

If the above is not acceptable to the representatives attending a future meeting for the discussion of this subject, then,

2. The three-year curriculum, as at present, be retained, and that there be established, also, a twelve-months' practical training course, in which the first three months shall be devoted mainly to theoretical training, and the subsequent nine months to the combined theoretical and practical work, such pupils to receive a certificate, with the title of "licensed attendants," and this course to be open to all applicants more than nineteen years of age, and of good moral character, and presenting educational credentials from a grammar school of the public school system, or its equivalent; the three months of theoretical training in the above

course to be given in such training schools connected with general hospitals in the State, as are acceptable to the State Board of Nurse Examiners, and the nine months of practical work to be given in hospitals in the State, similarly accredited and acceptable.

The revised course of training for nurses submitted, No. 1, is decidedly my personal choice, and is intended to give an opportunity to young women who will naturally take the high school courses, to round out their education by having only two years of specialized professional work to accomplish before their education is wholly completed. It is believed that this would induce a better qualified element to undertake the profession of nursing, and at the same time place the profession itself on a basis which would be competitive, and attainable without undue length of time in professional preparation. It is my opinion, also, that better nurses will be the result of this method, for I do not believe that a three-year training course is absolutely necessary for the preparation or perfection of a well qualified nurse.

The present method, of the addition of a third year, was instituted originally to give the hospital authorities an opportunity to remunerate themselves in the last year of the nurse's training, by utilizing her as a private-duty nurse to increase the income of the hospital. This method is indefensible and, in my opinion, has resulted, in the case of the average well prepared nurse, in cheating her out of one year of her life work; for, to educate nurses properly, it should not be done in training schools, on the theory of resultant financial reward, but on the theory of actually training the nurse, by teaching the pupil.

Furthermore, even in a three-year period, it is impossible to teach, or attempt to teach, the basal sciences of medicine, for even now, in studying the curricula required by different examining boards, it is seen that the courses are unequally balanced as to theory and practice, and that frequently too much stress and time are devoted to making a nurse-doctor, instead of a nurse proper.

It is unnecessary to criticise, but only to mention some of these requirements, to prove the truth of this statement: one board, for example, requires only eight periods of instruction in "diet in disease," and sixteen periods of instruction in "nursing in diseases of children

(including orthopedics and infant feeding)," the latter requirement being exactly the number of periods required, for instance, in bacteriology, a most difficult scientific study, and of little importance and less value to the student nurse, while, on the other hand, twenty-four periods only are scheduled for the whole subject of the anatomy of the human body. It must be evident that such a course naturally leans too much towards theory, or abortive efforts to learn it, and not sufficiently towards the more common necessities of private nursing.

It is readily admitted that this question is a most difficult one, and that the problems have been met as successfully as possible by the examining boards, hospitals and training schools, which have labored faithfully, but there is still necessity for improvement.

I am, personally, heartily in favor of higher standards, but especially in higher standards of scholastic preparation for the work, and believe that, all things being equal, proper preparation will give a better nurse in a shorter period of training. Recently, in examining the registration of nurses in the State of New York, I was impressed with the fact that a number of the training schools, that had been previously giving a three-year course, were decreasing the length of their training courses to two years and two months, or two years and three, four and six months, and that those hospitals still maintaining a three-year course were devoting the last year mainly to therapeutic specialties and professional problems.

The statutory requirements for graduation of nurses in that State (New York) are a course of at least two years and a preliminary education of at least one year of high school, or its equivalent. The statutory requirements for a registered nurse in this State (Virginia), are graduation from at least a *two-year* course, in an approved training school, connected with a general hospital, and evidence of "sufficient preliminary education, as may be determined by the Board." Evidently, then, some changes can be made in the requirements for graduation of nurses without violence to existing statutes in this State and without reflection upon present training schools or the State Board of Nurse Examiners, provided that, after the general conference alluded to above has met, it, in its wisdom, may deem such necessary.

GENERAL SUMMARY.

Education, as well as hospital preparation in training a nurse, are eminently desirable and necessary, but the teaching of the fifty-five practical nursing methods, such as "Care and Feeding of Infants and Children," "Surgical and Gynecological Nursing," "Fever Nursing," "Private Duty Nursing," etc., etc., and the repeated drilling in and practice of these, also, should be more strongly emphasized, and these practical methods almost alone, fused and blended into the life and training of the nurse, together with a mother-spirit which, with every sacrifice, finds its atonement and, with every service, its achievement, and will develop useful and satisfactory nurses, with the dominant quality of service as their highest badge of professional attainment.

In the solution of a matter which, like this, touches so many angles of social and professional life, naturally there will be differences of opinion. For instance, in an informal inquiry among the hospitals in Richmond, it was ascertained that the owners and managers of ten of the twelve hospitals in the city were in favor of a two-year course, while, on the other hand, a decided majority of the superintendents of these same hospitals favored a three-year curriculum.

This question, being largely professional, has, so far, been discussed mainly by the medical and nursing professions, who are naturally best acquainted with all the points involved.

The physicians contend—

1. That too much time is expended in a three-year course of training for nurses, in comparison with the average length of time that they practice their profession.

2. That too much time is devoted to the science of medicine, and not enough to the art of nursing, and that this has had a tendency to result in special graduate nurses instead of practical graduate nurses, willing to devote their time to the more ordinary cases of illness.

3. That the period of time in calendar months necessary for graduation is exactly equivalent to that now devoted by young physicians to their education; in the one case, twelve months in three years, and in the other, nine months in four years.

4. As a result of this, and other conditions named in the general consideration of this subject, pupil nurses are decreasing.

The nurses claim—

1. That at present too little time is allowed for the acquisition of the necessary knowledge to fit a nurse properly for her profession.

2. That small hospitals and hospitals not properly equipped with adequate facilities for training nurses in their training schools are the vital cause of a decrease in pupil nurses.

3. That hospital training schools which are properly equipped are now having an increase in the number of pupil nurses, it being reported that 50 per cent. of the training schools in the State now have a sufficient number of students.

It is unnecessary to give statistics to prove the present shortage of nurses, or even the approximate percentage of decrease as compared with former years, but the common and insistent report throughout the State, substantiated by the confirming voices of many sufferers, seems to be self-evident proof that this condition does exist, and is constantly increasing.

Whatever may be the causes, the fact remains that the problem confronting us is a very present and urgent one. The work of the nurse, in her sphere, is almost sacred in character and should be ennobling, for its cardinal principle, devotion to service for others, should cause humility in its rendering, and, as in the case of the single-hearted and high-minded physician in a larger sphere, should bring contentment with its performance and not ambitions out of alignment with higher purposes, and, if at times, one in the ministration of duty should forget her obligation, we should not indict the entire profession for this dereliction, but strive the more to make the servant worthier of the high ideals of professional practice.

The remedy sought, and the method adopted, should be one that will not lower the standards of nursing, but, on the contrary, one that will elevate the profession by inviting a better qualified element to enter it, and also one that will adjust and equalize the training courses with a view of better fitting the nurse to meet the actual and necessary duties of practical nursing, and of properly and successfully applying the physician's daily instructions. In this plan, the fullest justice must be accorded to the nurse, and the future interests of the patient, which are paramount, must also be conserved.

If, after a reasonable period of practice, the nurse should wish to further "fit herself for some specialized work, let her, like the physician, take post-graduate courses, with this specific end in view.

There will never be sufficient nurses, in the light of conditions made evident by the economic social reaction from resultant post-war adjustments, but the profession of nursing may be made more attractive and fitted for larger usefulness, in my opinion, if there is a revision of the training school schedule of theoretical studies, discontinuing some now taught and substituting more practical branches and more clinical demonstrations, and omitting some academic and scientific requirements now obligatory; in short, the whole course should be made more practical, as well as more personal and efficient, by always having a fully competent and interested staff of instructors who will give continuous and constructive courses with special consideration to the student *per se*, and to all that directly concerns her individual interests, as pertaining to the patient, the physician and the public.

A revision and rearrangement of the nurses' training course at this time will be in line with changes and adjustments in medical schools and hospitals now taking place, and experience proves that it is better to give a student, either medical or nursing, no course whatever in the basal sciences of medicine than to give a superficial one, which always is as unsatisfying and bewildering as it may be dangerous. It must be acknowledged by all that have given it thoughtful attention, that the action of the medical profession in advancing the requirements for the education of physicians was too drastic and precipitate, and has been an error, if not a serious fatality, so far as rural communities are concerned, and it is important that all due care now be exercised in the changes proposed for the future training school courses of nurses, in order that they shall be thorough and efficient, as well as practical and profitable to all.

Personally, I am convinced of the entire practicability of a revised two-year course of training, for teaching nursing alone, and am willing to admit that a three-year course is not even long enough to teach a nurse both nursing and medicine, as some seem to deem essential, but which, to my mind, is absolutely unreasonable, undesirable and unnecessary. Many of

the best nurses we now have, had only a two-year training course, and the three-year course, even now, is really only a two-year course, as far as *actual teaching* is concerned.

There will be, of course, different views as to the best methods for the continued training of nurses, in order that the greatest good to the greatest number may be accomplished, but it is hoped that the whole subject will be approached with a reasonable and dispassionate disinterestedness, especially for the public and professional welfare, for the nurse, individually, has a duty to those who call her, and we believe that in humility and in service she will answer.

As a citizen, too, she has a community obligation, and, through organization, an unusual opportunity to identify herself with the private and public interests of the people, living with them rather than on them, and with proper preparation and through the common tie of human sympathy, the ability to preserve and perpetuate the high ideals of her honored profession in the spirit of hope, and with the certainty of conquest.

The emergency is upon us; the issue must be met and solved, but not by dictation by any one person or profession, but by the co-operation of all.

107 East Franklin Street.

EARLY RECOGNITION OF SYPHILIS.*

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When we are confronted with the fact that 16 per cent. of the world's population are infected with syphilis, and that there are between six and ten million syphilitics in the United States; everyone should realize the urgent need of an early recognition of this dreadful malady. Equally so should a more generalized and effective treatment be studied out and standardized. As you know, syphilis is one of the most important medical diseases that the physician has to contend with, hence he should ever be on the alert for its presence; for to diagnose syphilis is often a serious matter. The diagnosis should never be treated lightly on account of its frequency, the many diseases it may imitate and complicate, and the various and sundry points of deception.

*Read before the Seaboard Medical Society, at Elizabeth City, N. C., December, 1920.

It is known that syphilis is a chronic infectious disease, affecting all branches of society; that neither age, sex, social position, nor chastity renders one immune to its attack; that we are unable to foretell its termination, for at any time during the life of an infected individual he may show its manifestations. Its symptomatology is as broad as medicine itself, no organ in the human body being exempt from its manifestations, and there being few diseases it may not simulate and modify. It lowers one's general resistance, and no infectious disease is followed by such distressing sequelae; e. g., deafness, optic atrophy, tabes, and general paresis. It is often communicated in marriages and, above all other diseases, has a more pernicious effect upon the descendants of its victims than any other hereditary disease.

Syphilis is primarily propagated only by direct contact with the specific and simple organism, notwithstanding its multiform and remarkable varied ways of revealing itself. This infection may be congenital or acquired. It is now generally accepted that a child born with syphilis was infected "in utero," and that no infected father can give his child syphilis, except by first infecting the mother. In acquired syphilis, 94 per cent. of the initial lesions will be found on the genital organs and are the result of sexual intercourse; the remaining 6 per cent. are located on some other part of the body, and are termed extra-genital chancres.

The search for the real cause of syphilis went on for many years with sad and disappointing results. Not until 1905 did the protozoologist, Fritz Schaudinn, and his confrere syphilologist, Erich Hoffman, demonstrate a spirilla in a chancre. The organism was first called "spirocheta pallida," but later, from its morphologic characteristics, was changed to "treponema pallidum." Its appearance is that of a spirally wound wire, 4 to 14 m.m. in length, $\frac{1}{4}$ to $\frac{1}{2}$ m.m. in width, and is recognized by the marked regularity of the spirals, its extreme motility, and lateral flexibility.

For convenience and from a clinical standpoint I shall classify syphilis as early and late syphilis. The former brings us at once to consider the chancre, or initial lesion. The true chancre is usually single, but may be multiple, and is auto-inoculable for the first ten or

eleven days, which goes a long way toward proving that syphilis is at first a local disease.

The period of incubation for the chancre is generally three weeks, a usual average of twenty-five days; with variations at fifteen to forty-five days. In the beginning it is a small reddish, itchy spot, with a rapidly excoriating center. Slowly the lesion extends at its periphery, and becomes a round, well defined superficial ulcer; rather elevated than depressed, and with very regular borders. The center is usually granular and the color of raw meat, a slight sero-sanguineous exudate, and with moderate tenderness, but in most cases no pain.

Just here, if we ever expect to reach a radical cure, is the time, and only time, to make a diagnosis, in order that we may gain time, before the treponema has spread to the lymph system around the sore, and before the serologic reaction has become positive. I cannot urge upon you too seriously that the recognition of syphilis should be made at the earliest possible moment. Everyone on the genitals and elsewhere on the body should be carefully examined for the spirocheta. Especially do I cite such cases for examination as sores on the hands and fingers of trained nurses, dentists and physicians.

For this diagnosis we have several methods, chief among which are the dark field illuminator, staining the organisms in the secretions, and staining the organisms in the tissues, also the india ink method. I shall describe to you, however, the most efficient method, the dark field illumination test. This is an attachment furnished for the microscope, and is substituted for the condenser. This allows no light to pass through the field except the rays of light that outline the delicate translucent spirilla. Remember to keep the lesion clean, and do not use medicinal agents or you will destroy all organisms from the superficial surface, and your test will be negative. If the sore has been treated, then apply wet dressings of salt solution for from twelve to twenty-four hours, when you should be able to collect a satisfactory specimen.

Just here, should failure be met in diagnosis, constitutional treatment ought not to be used, in most cases, but rather should we wait for our last, and perhaps most universal laboratory test, the Wassermann complement fixation test. This test is generally not positive

until the fifth week, the first onset of the initial lesion. It must not be forgotten, however, that the Wassermann test is not infallible, and not every patient who has a negative Wassermann test is free from syphilis. Yet, its great value has been shown in early recognition of relapses, after treatment and a follow-up for cases, often showing the need for further treatment, weeks and even months before marked clinical symptoms are recognized.

This brings us now to the consideration of the early recognition of late syphilis. Here we are confronted with three important questions:

1. Is the patient a syphilitic?
2. Is the patient's disease that of syphilis?
3. Is the patient's disease complicated by syphilis?

A physician, if he would be successful, must constantly keep before him these points in his daily contact with the sick. Only the first can be answered in most cases by the laboratory, but all of them can be determined in the average, if a careful study of the "whole individual" is earnestly and conscientiously made.

I regret to be forced to admit that syphilis has been most carelessly dealt with in the past. We have not spread the vital importance of an early recognition, nor have we impressed its horrors seriously enough upon our patients. But rather has there been a tendency to make a diagnosis from the patient's complaint, or his most prominent physical signs—e. g., "Eye strain, epilepsy, floating kidney, sacro-iliac disease, gastritis, neurasthenia, hysteria, rheumatic ocular palsy, gastric neurosis, functional heart disturbance, muscular rheumatism, neuralgia, bilious attacks, vertigo, sciatica, gouty diathesis, autointoxication, focal infection or endocrin disturbance," rather than spend the time and energy in a thorough examination and study of the case, as essential to a diagnosis.

In the early diagnosis of late syphilis, where symptoms are often hidden or associated with symptoms of other maladies, you will note your clinical findings coming prominently to your aid. What is meant by a study of the "whole individual" is all we can learn from the family history, personal history, and history of present trouble, and a thorough and searching physical examination. Do not over-

look the fact that latent syphilis is often found in the consort and progeny of the syphilitic. Too truly has this been brought clearly before me here recently in a husband who was found positive for syphilis after complaining of vague rheumatic pains. A further history and examination showed his wife and two children infected, yet presenting no visible or known symptoms. With such a clinical procedure plus the laboratory examination of blood, spinal fluid and roentgen findings, there should be few cases escaping recognition.

Now, let me call your attention to the hard and angry foe we must fight—an enemy more subtle and misleading than the will-o'-the-wisp, and an enemy that will rack your brain and ingenuity to combat, for it involves every field of medicine and every organ in the human body. Furthermore, syphilis is a chronic infectious disease permeating all branches of society, affecting the immediate progeny and later generations. Therefore, do I urge upon you the great need of an early recognition of syphilis and the syphilitic, for here and only here, lies success in cure, if radical cure is possible.

DIAGNOSIS OF FOCAL INFECTION.*

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The data which have been accumulated in support of the view that infectious foci give rise to symptom complexes apparently unrelated to the site of the focus, are too abundant to require additional argument to establish the hypothesis as a fact. But, like every other great discovery in medicine, when the principle has gained acceptance, it has been overworked, and applied without judgment. The etiology of a focal infection is too frequently invoked without the rigid diagnostic study essential to establish the relation of cause and effect. The result is that we are confronted with not a few disappointments in cases where more or less mutilating and injurious operations have been undertaken without that relief from symptoms that has been promised or hoped for.

There is no class of cases that demands a more thorough diagnostic study, both constructive and eliminative, before attempting to

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define the etiological factor, and to give the correct prognosis. The discovery of a single focus should not terminate the search, but all the possibilities should be investigated.

In considering the chronic sufferer from symptoms whose cause is undetermined, we have to deal with a problem whose analysis requires a broad foundation of pathological knowledge, combined with a wide experience of humanity. The anamnesis is of the highest importance in assigning the patient to the proper classification, and in developing the peculiar factors of the individual case. A history of which the facts are true, and in which the proper weight is given to the various details, builds for us a record which cannot lead us astray.

It will be found that such patients will ordinarily fall into one of two groups:

A. Those due to errors of hygiene.

B. Those due to objective lesions.

always remembering that both factors may be present in the same patient.

The history will usually decide what role is played by abnormal living, thinking and adjustment to environment, and what portion of the symptom complex is to be attributed to actual somatic disturbance and the effects of pathological tissue defects. We thus determine whether we have to deal with psychogenetic disorders or with those dependent on organic change.

Finding that our patient belongs to the group of somatic disorders, we usually find that when we have excluded the effects of trauma, neoplasms and extraneous poisons, we have to deal with the results of parasitic infection. In the further analysis, we first consider, in order of frequency, those infections of a general character, which may cause a widespread variety of symptoms, such as tuberculosis, syphilis, malaria, intestinal parasites, etc. These being excluded, we conduct a careful regional examination, giving especial attention to those structures prone to be the seat of focal infection, that is, the tonsils, teeth, accessory nasal sinuses, appendix, gall bladder, bronchial lymph nodes, prostate, uterine appendages. Clinical experience teaches us to expect in each case certain characteristics, both local and general, that are likely to be associated with each region.

TONSILS. Headache, which is frequently periodic and paroxysmal in character, sometimes

diffuse, sometimes referred to the occiput; myalgic pains in the back of the neck and shoulders, with hypertonus of the muscles involved; or neuralgia of the posterior auricular nerve suggest a tonsillar origin. Examination of the throat shows margins of the crypts reddened, with or without exudate; hyperemia of the peritonsillar tissues, usually of the anterior pillars; enlargement of the cervical glands draining the tonsils. One or all of these findings indicate tonsillar infection, old or recent. In cases of doubt, the services of a throat specialist and the bacteriological study of the material obtained from the *depth* of the crypt are necessary.

TEETH. I do not believe that any honest and well informed dentist any longer maintains that a knowledge of the condition about the root apices can be obtained through visual examination of the oral cavity. The X-ray is here indispensable. The presence of extensive caries, of pyorrhea, or of any devitalized teeth leads us to suspect peri-apical infection. It must not be forgotten that active apical infection may be present about a living root. I have seen several cases of neuritis of the distribution of the brachial plexus arising from dental infection, but not frequently enough to state that there is such a predisposition.

BRONCHIAL ADENITIS. This is suggested by a paroxysmal type of coughing, with little or no expectoration, and absence of physical signs pointing to parenchymatous lung involvement. There is frequently a low grade hyperemia with or without granulations of the posterior pharyngeal wall. The clinical picture here is difficult to demonstrate. The X-ray is of great assistance, but the differentiation of the findings from those of tuberculous adenitis is not yet satisfactory. I feel sure that non-tuberculous cases of this kind are more frequent than we have realized, and that remote symptoms may arise here, as in other cases of focal infection.

ACCESSORY SINUSES. These cases present a characteristic headache, which may be frontal, occipital, or diffuse. It frequently is present on awakening in the morning, and passes off a few hours after arising. The regional examination requires the X-ray and the services of a specialist.

The same diagnostic principles apply to the study of the structures below the diaphragm. The ready access of surgeons to this region has

so advanced the knowledge of the pathology and symptomatology of this region that further elaboration here is unnecessary.

The subject of focal infection is of too recent development, and the knowledge bearing on it is increasing too rapidly for us to have achieved as yet a satisfactory classification based on clinical syndromes. It has appeared to me, however, that the cases do group themselves in a fashion that permits of a tentative classification, and the following is offered with a full appreciation that it is subject to correction and amplification.

I. TOXIC GROUP. In which the findings point to toxic material circulating in the blood stream. Such may present:

a. *Albuminuria.* This finding, first regarded as indicative of the presence of Bright's disease, was later found to be an accompaniment of most acute general infections. We now realize that it is of frequent occurrence in chronic infection, and may disappear permanently, when such infection is eradicated. I have seen this happen in chronic tonsillitis, alveolar infection, gall stones and appendicitis.

b. *Acidosis.* This condition, especially as it occurs in children, should always entail a search for a focus of infection, and its removal if found. Complete cessation of the attacks ensues in some cases, and in others they diminish in frequency and intensity, and are the sooner outgrown.

c. *Hyperthyroidism.* The evidence is increasing that many, if not most, cases of this disorder are associated with infection, most frequently of the tonsils or teeth. The surgical removal of such foci is a valuable preliminary to other treatment in such cases, whether medical, surgical or with X-ray. The following observation is of interest in this connection:

Mrs. H., white female, aged 34 years, showed a slight unilateral exophthalmos and enlargement of the lateral lobe of the thyroid on the same side. There were no signs of increased metabolism. She was nervous and anxious, but this was attributed to a gloomy prognosis which had been given by another physician. The tonsils were badly infected, and removal was recommended. At operation a retro-tonsillar abscess was found on the side of the thyroid and eye involvement. Satisfactory recovery ensued, and when the patient was last seen it required careful observation to detect any asymmetry either of the eyes or

thyroid. A relation of cause and effect between the peritonsillar infection and the unilateral thyroid symptoms is very strongly suggested by this case.

d. *Anemia.* The old classification of anemias into primary and secondary still persists, but the latter group is steadily growing at the expense of the former. Almost any chronic infection may cause anemia. Chronic streptococcal infection, if of sufficient duration, is invariably associated with anemia and, in some cases, this may take on such a rapid development as to assume a pernicious type. It is rare in my experience to see a case of pernicious anemia with sound teeth. The discovery in any patient of anemia other than chlorosis should furnish a presumption of chronic infection, local or general.

e. *Arteriosclerosis.* While alcohol, syphilis and lead poisoning are recognized causes of arteriosclerosis, they can be incriminated in only a relatively small proportion of the cases that occur. Medical literature shows an increasing tendency to connect this condition with infectious diseases, especially with those of the chronic type.

II. ARTHRITIC GROUP. Gonorrheal arthritis was long ago recognized as an example of a metastatic condition arising from a focal infection. We have been very slow in recognizing the similar method of the production of other types of arthritis, both acute and chronic. Especially has arthritis deformans been productive of a voluminous literature, which has contributed little but clinical descriptions and palliative therapy. We now accept the hypothesis that any non-traumatic arthritis is the result of infection, either due to the implantation of organisms in the joint, or to the irritative action of toxic material which has migrated thither from a focus of infection elsewhere.

III. GASTRO-INTESTINAL GROUP. Here the patient's first complaint is referred to some disorder of digestion. It is the most difficult group in which to arrive at a correct opinion, because of the great variety of conditions, both local and general, which may give a symptom-complex that is superficially the same. What is commonly called the pyloric complex occurs in more or less modified form in so many conditions, that the mere statement by the patient that he has pain after eating, gas and constipation offers little of diagnostic value. Such

symptoms occur in gastric and duodenal ulcer, gall stones, cholecystitis, appendicitis, irritative conditions of the colon and rectum, deforming adhesions and anomalies that interfere with the peristaltic rhythm. They may also be found in pulmonary lesions, especially those in proximity to the diaphragm and the trunks of the pneumogastric nerves; in chronic infections of the teeth or tonsils; in chronic malaria; in purely psychogenetic disorders. The routine X-ray examination of the lungs of cases referred for study of the gastro-intestinal tract has revealed a surprisingly large percentage of cases with pulmonary tuberculosis, and without gastro-intestinal defect. I have had one case operated on for duodenal ulcer, after consultation with a prominent surgeon, in whom the operative findings were negative, and who afterward obtained relief of his digestive symptoms, when his malarial infection was properly treated with quinine. We do not, I think, properly realize that functional disorders of the digestive tract, producing symptoms referred thereto, are to be expected in any disorder which may produce abnormal stimuli in the distribution of the pneumogastric or spinal sympathetic nerves. A minute analysis of the history will, however, often point to differentiating factors. Organic lesions in the pyloric region usually furnish a regularity and persistence of symptoms not present when such symptoms are due to extrinsic causes. The thorough objective examination, including the use of the laboratory and X-ray, will usually enable us to form a correct opinion.

IV. SYMPATHETIC GROUP. In which the presenting symptoms indicate that the toxic agent is exerting its influence upon the vegetative nervous system. Such patients have usually been labeled as neurasthenics. They describe themselves as being nervous, irritable, getting easily tired, subject to palpitations, hot flushes, chilly sensations, sweating readily, or having cold extremities. They have a low blood pressure; are sometimes emotional, sometimes torpid. This group usually overlaps one or more of the others, most frequently the gastro-intestinal. They require a very careful anamnesis with a very careful interpretation to separate them from the purely psycho-neurotic cases. My own experience has led me to expect that when such symptoms have developed at or about a definite time in a person pre-

viously normal in body and mind, the cause will be found to be organic disease.

V. DERMATOLOGICAL GROUP. The relations of focal infection to skin lesions requires much further study. My experience leads me to offer the following observations: Careful inquiry into the history of certain cases of dermatitis (so-called eczema) reveals that the appearance of the skin lesions coincides with the development of foci of infection; that the skin lesions in such cases improve or entirely disappear upon the removal of such focus.

Persisting or recurring acne and furunculosis should lead to a search for focal infection.

I have had one case of long standing hyperhidrosis of the feet, in whom this symptom promptly and permanent disappeared upon the removal of a number of infected teeth. This case was primarily investigated because of albuminuria.

I have seen several cases of herpes zoster, in which the involved ganglia lay in the lymphatic paths which drained an infected area. In two of these (scalp infections), enlargement of the glands was demonstrable.

VI. SPECIAL SENSES. Aurists have long realized that their middle ear infections were metastases or extensions from pharyngeal infections. Optic neuritis, retinitis, choroiditis, iritis, cyclitis, when not due to syphilis or other general infection, are usually dependent on focal infection, most frequently of the teeth or sinuses.

VIII. PSYCHOPATHIC GROUP. Acute toxic psychoses have long been recognized as arising from both chemical and bacterial toxic agents. It would appear that a recognition of the role of infection in producing the more chronic type of mental disorders is growing, even since syphilis bagged a large percentage of psychopathic material. While some of the claims made of the relief of mental disorder accomplished by the removal of infected teeth may be over-enthusiastic, the claim is not entirely without foundation. I had several such cases in my service at the Walter Reed Hospital, 1917-1919, of which the following is an example:

A soldier, aged 42, with twenty years' service in the ranks, had for several years been top sergeant in a company of cavalry. Soon after the outbreak of the war, he was, along with other non-commissioned officers, promoted to the grade of second lieutenant. He promptly

went on sick report, and after a period of observation at his post hospital, he was sent to the Walter Reed Hospital as a mental case.

I found him a man of fine physical parts, but affected with a profound depression, having the facies of a melancholic. His troublesome idea was that he was unworthy to be an officer; he had been long in the Army, and knew that with his lack of education he could never reach the standard he had set for a commissioned officer. Attempts to argue him out of this attitude, comparing him with officers who were his inferiors in qualification, appeals to his patriotism and his duty to place his experience in handling men at his country's disposal, were alike unavailing. So great was his conviction of his unfitness that he could not bring himself to eat at mess with other officer patients. He would get his breakfast early before the other officers arrived, go without dinner, and buy milk and sandwiches at the post exchange for supper. The diagnostic survey revealed that he had abscesses at the roots of all his remaining teeth. These were removed and artificial dentures supplied. After treatment he was given a month's leave, and then assigned to recruiting duty. I saw him six months later and found that every trace of his mental disturbance had disappeared. He professed himself ready for any duty, and I gathered that he was prepared to endure even a still further promotion.

CONCLUSION. We find that the sufferer from chronic infection has nearly always sought relief in many quarters before presenting himself. He has tried physicians, various therapeutic systems and cults without success. The failure is due to the fact that no one has ever found out what was the matter. A rather large experience in the analysis of chronic cases has led me to realize that a proper diagnostic study, employing all the resources and aids that have proven of value, will usually lead us to the correct solution. The most common defect in those who have preceded us appears to lie in a failure to appreciate the value of an adequate and properly weighed history.

An early correct diagnosis, accompanied by a sound prognosis and a rational therapy, will be the means of preventing much suffering and loss of efficiency, will save our patients much ill-spent money and time, and will redound to the credit of genuine physicians and the dis-

crediting of commercial therapeutic systems and cults.

2010 R Street, Northwest.

DIAGNOSIS OF COMMON STOMACH DISEASES.*

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PHYSIOLOGICAL CONSIDERATIONS.

Internists, generally, now are disposed to place the motor or mechanical factors in a position of greater importance than that given to perversions or variations of secretory factors, in the early manifestations of the symptomatology of gastric diseases. In supporting this view, one should recall, (1) that the fast-ing stomach is in a state of tonic contraction and never empty, containing 50 to 100 c.c. of gastric juice, of HCl, and pepsin; (2) that hunger is characterized by rhythmic gastric systoles; (3) that repeated swallowing motions cause an inhibition of gastric tonus; (4) that food entering the stomach at once starts peristaltic action and this continues as long as food remains in the stomach; (5) that these peristaltic actions proceed from the parmedia toward the pylorus in rhythmic sequence, producing a constant pressure in the antrum; (6) that the first third cardiac of the stomach serves merely as a reservoir and, relatively, exhibits only slight peristaltic activity; (7) that 300 to 500 muscular waves (estimæ) pass through the stomach per hour, when the stomach is emptying a meal.

In recalling the chemical and motor factors of gastric digestion, one should remember that the acid contents of the fundus close the cardia; (2) that the pylorus opens in response to motor and chemical influences; and (3) intermittently the gastric chyme is injected into the duodenum; (4) that the presence of acid chyme in the duodenum closes the pylorus and keeps it closed until the duodenal contents become neutral or alkaline, when the pylorus relaxes, receiving in this manner gastric contents until the stomach is empty of food. While the above statements are open to some question as to exact proof, the experiments of Cannon and other physiologists, as well as the observations of Smithers and other clinicians, seem to sup-

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port them. Bearing on this phase of the subject, the experiments of Miller, Bergeim, Reh-fuss and Hawk,¹ Philadelphia, are worthy of a brief note here. They found that the sight of a neatly set table with nourishing food resulted in a distinct secretion of gastric juice in normal man; that odor, also, produced the same effect, but not so markedly; that tasting and chewing of food, without seeing or smelling, produced no marked secretion; that the combined stimulation of tasting, chewing and smelling of food produced a greater secretion of gastric juice than smelling alone; that the sound and thought, alone, of a frying beef steak produced a gastric secretion, but smell, and hearing alone produced little effect; that foods poorly or distastefully prepared and unsavory of odor or taste, with thoughts of unwholesome nature, resulted in a delayed acid secretion and a tardy evacuation of the stomach; that newspaper reading during a meal appeared to exert no influence on stomach function. These authors² also tested gastric response to tea, coffee and cocoa. Using a uniformly mixed meal in normal persons, upon drinking a liter of cold water, cold or hot tea, hot coffee, either plain, with cream, or with cream and sugar, they found that the evacuation time of the stomach was not significantly delayed; that the addition of sugar alone to plain coffee delayed emptying, that a liter of cocoa markedly delayed gastric evacuation, but small amounts had less effect; that these beverages, however, produced high acidity but, apparently, by this, the evacuation of the stomach was not delayed; that coffee with sugar alone delayed production of gastric acidity; that coffee with sugar and cream had less effect upon acidity; that cocoa distinctly delayed acidity. They observed that heart beats were markedly increased, vaso-motor relaxation, tremors and other nervous signs were produced by a liter of tea and coffee, while cocoa did not produce these effects but on the other hand excited a sensation of fullness of the stomach.³ These authors⁴ found that 100 grams of cane sugar or glucose in concentrated solution markedly retarded secretion and delayed the evacuation of the stomach; that small amounts (10 grams) did not act in this way; that candies inhibited secretion and retarded evacuation in proportion to amount taken. This effect was much modified by adding food, as milk, eggs or chocolate. These authors⁵

found that the acid response and evacuation times of nearly fifty kinds of pies, cakes and puddings in normal persons were as follows: average time for puddings was 2 hours and 18 minutes, for pies 2 hours and 27 minutes, for cakes 3 hours and 2 minutes. The total acidity average for puddings 92, for pies 90, for cake 90. So puddings, while producing greater acidity, were handled better than pies, while cakes were less easily cared for than pies or puddings.⁶

DIAGNOSTIC CONSIDERATIONS.

I. GASTRIC SYMPTOMS. The domain of subjective symptomatology in stomach diseases deserves accurate observation. Stomach trouble has its beginning, whether from causes within or without the stomach, in the appearance of a rather clear group of symptoms, often not adequately considered by physicians. In the patient's narrative of his past and present clinical history, it is important to note the development and the real nature of certain "troubles" that appear during gastric digestion. The loss of weight; the loss of appetite (anorexia); the appetite for unusual food (parexia); the excessive appetite at meals (polyphagia); the unsatisfied appetite (acorea); the burning sensation in epigastrium or sternal region before or after food; the regurgitation of gastric contents and the eructation of gas; the occurrence of pain, its time, duration, and character; nausea; vomiting; all these are symptoms directly related to gastric misfunction and should be early run down in order to understand their diagnostic significance. The fat-forty-female belches-gas-spells-gall-stone-aphorism is an illustration of the interpretation of a late and quite common syndrome appearing in the domain of gall tract surgery, which the practitioner and the internist may rightly apply in the interpretation of common stomach symptoms. The feeling of distress after eating, a sense of distention or gas formation, associated with morning headache, dizziness, depression of spirits, drowsiness, lack of energy, muscular lassitude, and cramps, are usual subjective symptoms in stomach cases which every practitioner should clearly evaluate in terms of present misfunction or on-coming disease. Probably no more important investigation in subjective symptoms can be made than in the field of pain because pain is usually the

symptom which causes the patient to consult the doctor.

Freidman⁷ has divided gastric pain into continuous and intermittent varieties. The continuous types are due most frequently to, (1) carcinoma, (2) marked pyloric obstruction and (3) penetrating ulcer with peritoneal involvement. The intermittent pains are divided into (1) immediate, (2) early and (3) late: the immediate pains are found in (1) ptosis, (2) neurosis, (3) obstruction of the cardia, and other conditions; the early pains, including first hour after eating, are most often due to adhesions in any part of the stomach, including (1) ventral hernias, and (2) pericholecystitis; late pains (one to three hours after eating) are due to (1) intragastric pressure or (2) pylorospasm, usually resulting from hyperacidity.

The so-called hunger pain is thought by Hamburger and others to be due to strong contractions and intragastric pressure; this does not altogether satisfactorily explain them but the fact remains that, when present, this type of pain is accepted as an indication of chronic ulcer.

II., GASTRIC ANALYSIS. Fractional analysis of gastric contents during the period of digestion has come to stay as a diagnostic method. It is a useful procedure and reveals many interesting points in the process of stomach functions but its two chief directions of information are to be found in (1) variations of motility of the stomach after the introduction of a test meal; (2) disclosing perversions of gastric secretion. If we know, for instance, that the simple Ewald test meal, which is the one of low acid and rapid evacuation variety, produces an acidity of more than 80 or less than 20, and evacuate the stomach only after two hours and a half or within one hour and a half, we may judge fairly accurately of the stomach misfunction by its use. Rehfuess and Hawk⁸, in connection with rapid evacuation of the test meal from the stomach (hypermotility), give this test four general diagnostic explanations: (1) subacidity and achylia; (2) small percentage of duodenal ulcers; (3) a form of scirrhus carcinoma converting the pylorus and antrum into a funnel; (4) a group of stomach cases due simply to peristaltic overactivity (gastric chorea, French). To delayed evacuation (hypomotility) they give two diagnostic indications, (1) atonic

stomachs; muscle defects with dilatation, (2) organic obstruction; as in contracting pyloric ulcer, carcinoma of the pylorus, hypertrophic pylorus, benign tumors, pylorospasm, syphilis of the stomach, adhesions from without (gall-bladder and pancreas, etc.)

As just stated, fractional analysis is an aid in determining the perversions of secretion. We may do well to recall some of the general conclusions of the above mentioned workers as to the diagnostic meaning in this function.

1. *Clean Digestion Group.* Cases of disordered or perverted secretion, without evidence of mucous membrane disease or irritation, are called clean digestion usually appearing as a digestive or post-digestive hyperchlorhydria (hyperacidity), seen often in the so-called reflex cases, as gall-stones, appendix and abdominal adhesions. The assumption is that the disorder of the secretory apparatus, appearing without mucosa irritation, comes through the nervous enervation of secretory glands of the stomach.

The "clean subacidity" fractional tests are ascribed to constitutional or metabolic diseases, as gout, thyroid disease, pellagra, etc.

2. *Mucus Group.* Fractional analysis of gastric contents discloses a second group that assumes rather definite diagnostic significance. This is called the mucus group. In cases showing gastric mucus, noting particularly the distinction between swallowed mucus and true gastric mucus indicates true disease of mucous membrane and introduces that large group of cases, the gastritis group. Some one has enumerated two hundred causes for chronic gastritis, a common condition of varied etiology.

3. *Secretion Variations and Intragastric Blood Group.* The fractional analysis of the stomach showing variations from the normal in secretion and the pressure with simple intragastric blood may reasonably be diagnosticated as ulcerations (minute erosions), acute ulcerations, (multiple erosions), chronic ulceration, carcinoma or gumma.

4. *Secretion Variations Plus Blood, Pus, Mucus and Bacteria Group.* This indicates diagnostically infection, inflammation and ulceration and may be indicative of serious infection—gastritis, gastric carcinoma or gastric syphilis.

III. X-RAY EXAMINATION. The study of gastric disease need not depend alone upon the

chemical analysis of its secretion or upon the time of evacuation of a test meal, because nothing contributes more to an accurate understanding of the disease of the stomach than serial radiography and fluoroscopy. The improvements of the apparatus for x-ray study of gastro-intestinal tract and the skill of the roentgenologist in the interpretations of the position, the peristaltic activity and the presence of adhesions, obstruction or pathologic structure in the stomach and adjacent region, are such as to make the internist and the surgeon far more assured of accurate diagnosis than is possible by physical examination or gastric analysis alone.

Carman's⁹ contribution on the roentgenographic study of spasm of the stomach offers us a favorable opportunity to disclose x-ray values as a diagnostic aid. He mentions briefly in this connection that spasm of the stomach is either intrinsic or extrinsic: (1) intrinsic, if due to an intragastric lesion; (2) extrinsic, if due to lesions outside of the stomach. In ulcer three forms of spam may be distinguished: (1) incisura or hour-glass stomach; (2) diffuse spastic distortion of the stomach; (3) spasm of the pyloric sphincter. The defect or niche in these cases is persistent. Extrinsic spasms arising from ulcer of the duodenum, gall-bladder, and appendiceal lesions, usually are localized or regional, but sometimes produce total gastropasm which is out of proportion to any physiological activity. He does observe that belladonna or atropine has no effect upon the intrinsic spasm, but in extrinsic type the deformity may disappear, after physiologic effect of the drug is attained.

GROUP DIAGNOSIS.

The more modern trend in practice is back to the position of the general practitioner: to the grouping of specialists for a general study of the ailing body.

Specialism through recent decades has so increased scientific knowledge that each organ or system of the body has almost become a domain for the elaboration of a distinct science or specialty. This has brought about a large number of skilled specialists working in different fields of medicine. The inevitable isolation of such specialists, as they have become more and more engrossed in problems peculiar to the several specialties, has brought us face to face

with the grave faults of this movement in medical practice which has made it imperative to bring about a change in the interest of efficiency and good faith.

So, to reap the benefits that specialism has brought and to escape the serious evils that its individualism has become by its natural use, an effort has sprung up to bring into operation a team-grouping of specialists for general and special study and general and special therapy of the diseased body, by what seems to be a salutary development, group medicine. We may forestall not only the menace of scientific "Stale Mate" but also a gross tendency to commercialism which has been showing itself in the system of referring patients from one specialists to another without a general or organized "interpreter." Group medicine should bring back in the person of group specialists the general practitioner who, in his time, did excellent work for his patients in the field of medicine, surgery, obstetrics and diseases of eye, ear, nose and the throat. So, a well mannered group of specialists, as experts of several fields of medicine, may serve with accuracy, fairness, and efficiency the diseased body and, by the application of special diagnosis and special therapy, effect cures.

Group medicine in the diagnosis of stomach diseases offers us an especially favorable opportunity for illustrating this newer arrangement in medical practice. Diagnosis of stomach diseases, as well as the treatment of them, may fall in the domain of several specialties. For instance, taking the so-called "reflex" indigestion group of stomach diseases, the association of the surgeon with the internist in diagnosis and the removal of the cause of this condition is quite important in this connection. In these cases, also, group assistants in the microscopic, pathologic and the x-ray laboratory form a most able help in successful etiologic diagnosis. The "reflex" stomach misfunction may get its primary etiology in an infected gall-tract, in a diseased appendix or in some other surgical condition. Only surgical treatment can be relied upon to replace the stomach in position for medical treatment. Again, to illustrate, in the dual field of the ophthalmologist and the internist may be found a quite considerable number of stomach diseases. Eye strain, and refractive errors are common causes of dysfunctionation. The proper treatment of

the eye condition is primary requirement before the internist can hope to succeed in restoring the stomach. So, the best etiologic diagnosis, often times, of stomach disease can be attained only after the patient has been reviewed and studied by a general group of experts. The more or less permanent association of such a group upon a basis of mutual respect and harmony makes the work stronger and more free of criticism and error.

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ONE HUNDRED PROSTATECTOMIES.*

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In reviewing the experiences derived from one hundred prostatectomies the following points influencing the diagnosis, prognosis, operative procedure, ultimate outcome and the mortality of the patient, have been observed by the writer. This series extending over ten years or more has brought out only in the last few years the dependence and faith to be put in the kidney efficiency as carried out by the phenolsulphonephthalein test. On several occasions patients have been brought in with acute retention which demanded an immediate suprapubic cystostomy. In this acute surgical state, there could be no delay for the estimation of the renal efficiency, so the blood urea examinations have been carried out to get a general reckoning of the patient's resistance for ultimate enucleation of the prostate.

An attempt to help the old man has been regularly adopted regardless of the physical condition he has shown on entering the hospital, and a suprapubic cystostomy under cocaine (and more recently novocaine) has been done in every instance of retention, a large tube being placed in the bladder and the radical operation of prostatectomy being delayed

until the condition of the patient indicated that it was advisable. In a few instances (two) the prostate has been removed at the time of the suprapubic opening; in the remaining cases the enucleation follows the suprapubic cystostomy on an average of seven days. A few have been done on the fourth day, none earlier than this, and in one instance seven weeks elapsed before the big ordeal was attempted; while in another instance sixteen months elapsed. The old man (70), with extremely bad heart, made an excellent recovery and is well and happy six years after the operation. We are guided in our determination when to operate by the general condition of the patient, the temperature, wound, appetite, urinary output and findings, and when experience (a heavy-handed teacher) tells us that he is at his maximum for anesthesia and the shock of a major operation. It is better to wait a week too long than to operate a day too soon.

AGE. The average of all patients is 65, the youngest 51, the oldest 86.

RACE. There have been only 10 per cent. of colored men operated on, an apparent contradiction to the statement that previous venereal history and infection is one of the predisposing factors of prostatic enlargement.

KIDNEYS. A large per cent. of cases showed albumin and pus, and in six the hemorrhage was so great from some ruptured intravesical capillary that the clots effectually blocked the bladder outlet, demanding an immediate opening. This ruptured vessel is apparently at all times at the vesical margin of the prostatic urethra and automatically seals itself when the bladder is properly drained. The low specific gravity of interstitial nephritis obtained in twelve cases, and casts were found constantly in those cases, giving a history of long duration. The reaction is regularly alkaline and a low grade cystitis is present constantly. When there is a replacement fibrosis of the bladder musculature, the ureteral ora give way and *pyelitis*, *pyonephrosis* or *pyelonephritis* may be added with their train of symptoms. The urinary findings, the differential blood count and irregular temperature curve, with no pain, indicate the trouble.

HEART. This must be carefully noted, it being the organ of an old man. An acceleration of the second aortic was noted in several instances due to back pressure of the kidney. Myocardial changes, varying degrees of dila-

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tation, insufficiency and murmurs go with the prolonged strain and, although it has not been our practice to use any heart stimulants, the heart's action must be noted frequently and carefully.

BLOOD PRESSURE. The blood pressure being constantly taken in those instances when it ran high before operation, we were particularly concerned about hemorrhage, but noted a general recession of some 20 to 30 points following the enucleation of the gland. This blood letting at the time of operation is apparently of benefit to the old man, as has been noted above; the systolic pressure continues some 20 to 30 points less than before operation for several months, probably at the end of this time it gets back to its usual state, but during this time lessening the strain upon the heart has certainly been of benefit to the patient.

ARTERIOSCLEROTIC CHANGE. In one case in which there was evident palpable arteriosclerotic change, the patient suffered a hemiplegia under the anesthetic, succumbing in forty-eight hours following the operation.

CYSTOSCOPIC EXAMINATION. In but few instances was this carried out to further substantiate the diagnosis, as it has always been the writer's opinion that such a mechanical procedure was inadvisable if the diagnosis could be made by the history, rectal examination and urethral mensuration. In those instances in which cystoscopic examinations have been carried out, the varying pictures are of interest, for we recognize the infected bladder and the clean bladder, the eccentric and the concentric states. Trabeculae, large irregular hypertrophied bundles, may be seen here and there, between which are found diverticulae of varying shapes and sizes. In the eccentric dilatations, with the ureteral ora giving away, flakes of mucus and debris may be seen rushing in and out of the ureteral mouth in the act of inspiration and expiration. The picture of the prostatic hypertrophy varies in different instances, its margin irregular and, in the edematous state, whitish and translucent and projecting upward to varying degrees in the cavity of the bladder.

RECTAL EXAMINATION. This has been made in every case and it is interesting to note the varying characteristics of the hypertrophied gland. Feeling only the posterior margins of the prostate, the intravesical projection and

elevation cannot be determined by this means alone but with urethral investigation, the residuum, the prostatic length and the resistance to the catheter together give pretty accurate determination of the character of the growth and the projection into the cavity of the bladder, with the elevation of the internal sphincter above the bas-fond of the bladder.

CANCER. It has been stated that 22 per cent. of all the enlargements of the prostate are cancerous. This condition can be usually recognized by the finger in the rectum. The growth is almost invariably beneath the trigone, between the seminal vesicles and around the vas deferentia, and to the finger gives the sensation of great density, of even stony hardness. This is in marked contrast to the soft, spongy, elastic glandular overgrowth. There is also associated with cancer of the prostate, with remarkable constancy, a thickening of the bladder outlet and a sclerosis of the median portion of the prostate, so that the tissues about the internal sphincter show less resiliency and elasticity, so that catheterization of the bladder is most difficult and at times impossible. In our series we have had fourteen cases of cancer, and in one of these the infiltration was so great that enucleation was impossible. In the remaining cases the prostate was enucleated and radium used.

RADIUM. On two occasions after the use of radium inserted suprapubically and through the urethra following prostatectomy for cancer of prostate the resulting fibrosis was so great that there was apparently an obliteration of the deep urethra so that a permanent suprapubic opening was established. More recently a direct application of radium needles through the perineum into the substance of the prostate has been liberally recommended. This is done before any operation is carried out upon the bladder for drainage or attempted prostatectomy. A little cocaine injected into the skin of the perineum, a small nick with the scalpel and the long sharp radium needle carrying 15 to 25 mgm. is thrust into the actual substance of the prostate and left there from eight to sixteen hours. Later, if conditions justify, prostatectomy may be attempted, to be subsequently followed by the use of radium directly applied or by the cross-fire of X-ray.

More recently, when the suprapubic opening has been established, the writer has been

plunging the radium needles through this opening into the very substance of the prostate, giving at least 500 mgm. hours.

STONES. In only six cases were stones present, these invariably in the bas-fond of the bladder and in only one instance was it agglutinated to the wall. There have been many cases operated on for stone in the bladder which was due to the retention of prostatic hypertrophy, producing pain and hemorrhage, and the stones removed, one suprapubically with cocaine, no attempt being made to remove the prostate as the condition of the patient did not justify this work.

RESIDUUM. This varies in quantity and character; purulent, nasty and stinking in the cases of long history and great retention, to a satisfactorily clean urine in cases of shorter duration and less retention. The least amount has been some two or three ounces and the largest amount twenty-one ounces, the average being about nine ounces. This record is independent of retention cases in which the bladder is unable to empty any of its contents, our statistics being associated only with those cases in which there is the ability to void regardless of its effectiveness.

URETHRAL INFECTION. On several occasions we have had the opportunity to see a profuse urethral discharge following heroic attempts for the relief of acute retention. The suprapubic opening is established, and in one or two days a copious discharge is noted, which is probably aggravated all the more by a sticking together of the meatus and the urethra not being washed out with the urine. Investigation of the character of this pus shows staphylococci and extracellular diplococci. This is relieved by irrigations and instillations of argyrol.

CATHETER LIFE. Five per cent. had been catheterizing themselves from several weeks to twenty years. In this latter case, the bladder had forgotten how to work and repeated daily educational attempts were only partially successful.

BLOOD EXAMINATION. There has been universally a slight increase in leukocytes and a remarkably high standardization of the hemoglobin count.

PTHALEIN. The average phthalein output in this series of cases is 54 per cent. On one

occasion, a patient presenting himself for operation showed a phthalein output of 11 per cent., which absolutely contraindicated operation, the patient dying in convulsions a few weeks later. This is the lowest estimate we have had. The highest output happened to be in a man of 76 and was 70 per cent. This test has been uniformly estimated on the two-hour output and, proving so reliable and absolutely trustworthy, we have had no reason to discontinue it and try some other less reliable means for the accurate estimation of renal efficiency such as phloridzin, cryoscopy, etc. In one instance, the test showed 33½ per cent. for two hours and four days after the suprapubic opening, a gain of 12 per cent.

BLOOD UREA. This has been made only when the phthalein was unsatisfactorily obtained, or when we wished to further substantiate this test. Thirty per cent. is about the maximum; wide variations from this influence the judgment for operation as in the phthalein test. The maximum blood urea nitrogen is 18 per cent.

PRELIMINARY OPERATION. At the time of the preliminary operation, the bladder is filled with sterile fluid, if it can be reached without trauma or irritation and, after having been thoroughly irrigated, the opening is made into the bladder for drainage with novocaine. This has been our invariable rule, and in only two cases has this preliminary drainage and prostatectomy been done at the same time. In both of these instances the patients were comparatively young and in very good condition. We have used the retained catheter in only two cases as a preliminary drain to prostatectomy. These cases were most tolerant to catheters, for we have not found the bladder as tolerant to this foreign body as some observers would lead us to believe.

REMOVAL OF THE TUBE. More recently, in about the last twenty to thirty cases, the suprapubic tube which is put in the bladder for drainage at the time of the preliminary operation is removed in two or three days and the urine is allowed to trickle through the wound into sterile compresses, which are frequently changed, the writer having observed, if the tube remains too long in the sclerotic tissues, a fibrous canalization occurs which certainly delays union and prolongs the convalescence.

GENERAL ANESTHETIC. Ether has been used in 98 per cent. and nitrous oxide in the remaining 2 per cent. for the radical enucleation. The writer has never attempted but once the enucleation of the prostate by a local anesthetic; this was successful, but the shock and distress was not justifiable when we have the narcosis of ether. The relaxation and freedom from strain which is obtained by ether makes the operation shorter and much more desirable than the anesthesia produced by nitrous oxide in which there is always some straining and which might encourage rupture of an artery from increased pressure. The two cases in which nitrous oxide was used were (1) a man with pronounced bronchial asthma, (2) the oldest of our series, 86, whose kidney efficiency never came up to the standard which we had hoped to get and we were always dubious about the outcome.

DILATATION OF THE STOMACH. This has been observed in two cases, in one case following the use of $N_2 O_2$. Gastric lavage and rectal feeding combated this condition satisfactorily.

ENUCLEATION. In five to twelve days, an average of eight days, the patient is prepared for enucleation of the gland. The bladder being irrigated and a few stitches cut, which were put in at the previous suprapubic cystostomy, the index finger of the left hand is inserted into the rectum to support the prostate and the index or middle finger of the right hand is inserted into the bladder and the intraurethral enucleation of the prostate is carried out as taught by Bentley Squier. In certain instances in which there occur intravesical snout-like projections, the prostate building up and hanging over anteriorly, presenting into the bladder as does a hard lacerated cervix in the vaginal canal of the multipara, the enucleation may be carried out by scratching through the vesical mucosa posteriorly over some prominent adenomatous hump and projecting the enucleation anteriorly. The writer has at all times been particularly careful about the recto-prostatic ligaments, these being torn at the expense of the prostate rather than at that of the rectum. It has never been our misfortune to lacerate or injure the rectal wall. It is fortunate indeed that the fascia of Denonvillier is so placed in this location as to act as an efficient and dense barrier against infection by the colon bacillus from the rectum. On removal of the prostate, a sound is now

inserted through the urethra, but care must be taken to find the actual openings in the two layers of the triangular ligament. On several occasions, these openings have been determined with considerable difficulty. The beak of the sound is brought through into the suprapubic opening, the rubber tube of Hagner's bag is shoved on it, the sound withdrawn and bag blown up in the bladder and pulled down so as to compress the internal sphincter and, extravaginating it, block the prostatic cavity posteriorly so that there can be no greater hemorrhage than that which occurs between the sides of the bag and the prostatic sheath. In one instance, a hard dense sclerotic contracted prostate had had about six months previously an attempted suprapubic enucleation with no result. We tried also to remove the gland with an absolute failure. The perineal route should have been selected. In this instance, bad surgical judgment was evident, and the old man, now a year after operation, still wears a suprapubic canula.

ENTERING THE PERITONEAL CAVITY. The complications at the time of this second operation, which is not usually considered, is, that the finger in breaking up the granulation tissue at the upper angle of the wound to gain the bladder for this enucleation may so break through these granulations as to burst into the peritoneal cavity. This has occurred to the writer on two occasions.

IDIOSYNCRASIES. In one instance a most pronounced idiosyncrasy, iodine poisoning, occurred, the patient having a large generous urticarial rash, with cerebral symptoms, from having the abdominal wound painted with iodine before the operation. Cocaine at the time of the preliminary operation produced an acute poisoning which subsided.

The factors which confront us at the time of the operation are (1) hemorrhage, (2) shock and (3) post-operative complications.

HEMORRHAGE. The writer has uniformly used the Hagner bag in all cases, pulling it down well and holding it by the perineal support which we devised several years ago. We have never used the Pilcher bag, which is like the Hagner and has the added qualification of urethral drainage. The bag is kept taut for four to six hours, the air is then released, the patient watched for further hemorrhage and, in the event there is any, the bag is immediately blown up and pulled down again. This

may be repeated two or three times, or, as occurred in one instance, left constantly in place for forty-eight hours. Attention must be called to the bag *not* collapsing, the pressure of the forceps squeezing the tube so that the air does not get out of it. On releasing the forceps, the tube should be squeezed or rolled between the fingers to see that it is open and that the air can escape. The bag is usually removed twenty-four hours following the enucleation. We have never used the Pilcher bag or packed the cavity with gauze to control hemorrhage. Formerly, in an earlier series, we did use constantly the irrigation method following the enucleation, falsely supposing that the blood could be washed away as fast as it accumulated in the bladder from the torn, lacerated periprostatic plexus, and, because the color gradually changed from a scarlet to a light cherry red as the patient became more and more exsanguinated, we were pleased at the lessening amount of blood, but distressed in a few days that the operation was a success but the patient died, despite heroic doses of coagulose, epinephrin and other hemostatics.

SHOCK. This is treated as in all surgical conditions, particular attention being paid to the fact that the old man of threescore years and ten is not as resistant and strong as the younger patient. Constant vigilance and attention are, therefore, obligatory.

POST-OPERATIVE COMPLICATIONS. Post-operative complications of the suprapubic operation such as infection, pyelitis, septic nephritis, stone formation, incontinence, hernia, epididymitis, phlebitis, parotitis, pulmonary embolism, septic endocarditis and acute cardiac dilatation have occurred, and do occur, and should constantly be borne in mind. Fecal impaction and epididymitis are the most common. A suspensory and constant elevation relieve the tendency to the occurrence of the latter.

INFECTION. In one instance the bag was withdrawn. The tube, not having been thoroughly sterilized by a strong carbolic solution and infecting the prostatic pouch, gave rise to a violent infection which terminated the patient's life in a few days. Infection of the prostatic bed occurs probably in a much larger per cent. of cases than we think. The lacerated, torn vessels readily take up an infection from the base of the bladder. Irrigations of the bladder with a catheter through the suprapubic wound help this condition. At times this in-

fection extends to the aponeurosis of the external oblique so that there is a distinct supuration which produces a diastasis of the recti which delays ultimate union and may demand operation for closure of the suprapubic fistula. In only two of the above series of cases has it been necessary to sew up the suprapubic opening. In both of these instances was there an infection of the aponeurosis of the external oblique producing the suppuration above referred to. Invagination of the bladder wall by layer sutures of catgut and bringing together of the aponeurosis effectively blocked the opening. But one thing is certain, the least we do the better, and it has been noted that those cases which do the best are the ones to which we did the least and, although there is an accumulation in the base of the bladder and about the prostatic urethra, with epithelium and deposits, we are satisfied that this will come away in course of time, and it is a great mistake to attempt any irrigation per urethram. In one instance, fifteen days after the operation, irrigation of the bladder was carried out through the urethra, which resulted in repeated and violent urethral chills for several days, the patient finally succumbing to malignant endocarditis some two weeks later.

PYELITIS, pyelonephritis and unilateral haematogenous infection of the kidneys are at times noted. These latter two conditions are particularly serious, for, although the condition may be limited to one side, the patient at his age and having sustained a major operation is not a candidate for another.

STONE FORMATION. In two cases of our series there have been stone formations in the bladder following the removal of the prostate. In both of these instances there was at the time of the operation a chronic pyelitis, probably from back pressure and, although there was no residuum and satisfactory evacuation of the bladder obtained, the stone formed possibly in some small diverticulum between the hypertrophied trabeculae in the floor of the bladder. These were removed by perineal section.

INCONTINENCE. There has never been an actual incontinence following the suprapubic operation for the removal of the prostate alone. In one instance in which the bladder had been catheterized for twenty years and had completely lost its tone, an external urethrotomy was done following the prostatectomy and a severance of the external sphincter muscle car-

ried out with its permanent dilatation to encourage an overflow, the patient wearing a urinal, which we considered a better outcome than the possible infection from repeated catheterization. Incontinence does occur from the infrapubic operation and, on two occasions, the writer has had the opportunity to operate for this condition with not the best result. In another case there was a continued frequency by night, three to seven times, the calls being only three or four times by day for urination. Rectal and cystoscopic examinations of this case were negative, urinalysis negative and residuum negative, so that the writer is of the opinion that it is a nervous phenomenon, independent of any sequel to the operation.

HERNIA OF THE POSTERIOR WALL OF THE BLADDER. In one instance there was a marked abdominal distention producing a hernia of the posterior wall of the bladder, which was shoved so effectively through the abdominal opening as to cause a retention of urine, and the patient being the oldest of our series, 86, ultimately died.

SOUNDS. Whereas formerly sounds were used regularly following prostatectomy, on the ground that we believed a complete dilatation of the internal sphincter was necessary, this treatment is no longer observed. Nothing is done, either by irrigation, instillation, or otherwise, to interfere with the convalescence of the urethral mucosa.

MORTALITY. Recapitulation of the cases, the outcome and mortality, shows the following:

Thirteen cases were operated on, suprapubic cystostomy being done under cocaine or novocaine, the extreme debility being such that the patient never came to enucleation.

Hypostatic pneumonia	1
Apoplexy	1
Acute dilatation of the heart on sitting up. .	1
Septic endocarditis	1
Infection on removal of Hagner bag.....	1
Uremia	2
Hemorrhage	3
Anuria	1
	11

In conclusion, the writer would emphasize that the responsibilities of the geriatrist are probably even greater than those the pediatrician encounters, for the pendulum has swung through its fullest arc and, at threescore years and ten, nature does not permit of surgical insults without the heaviest penalty.

POSTURE IN RELATION TO MEDICAL AND SURGICAL PROBLEMS.*

By JOHN ALLAN TALBOTT, M. D., Washington, D. C.
Associate Orthopaedic Surgeon, Providence Hospital;
Orthopaedic Surgeon, Freedman's Hospital,
Washington, D. C.

It is rather difficult to discuss medical and surgical subjects at this time without in some way referring to the experiences and lessons learned by medical men in the recent war. One of the first and most important observations made by many of us was in regard to the physical fitness of the young men of this country within the draft age. When one takes into consideration that in the State of Massachusetts 46 per cent. of the drafted men were refused for physical disability (although this is probably higher than in many States, the average is somewhat alarming) the thinking individual—especially of our profession—should take counsel as to the cause and remedy for this condition. Especially so, when the great majority of those turned back had remediable disability: bad backs, weak pronated feet, poor teeth, etc. Of the two million sent overseas it is no exaggeration that many thousands, after the most rigid examination on this side, fell down on the job over there because of physical disability. And again the majority were remediable.

It is difficult to fix the blame for the rather poor physical condition of the young men of this country on any one group of individuals. Is it the fault of our profession? Of our system of training in the schools? Or, is it just general indifference of the public? I think that we as medical men fall far short in our mission in life if we confine ourselves to the combating either medically or surgically of existing disease, or to the advancement of preventive medicine, without taking into consideration more seriously the mechanical aspect in the causation of disease. I think we should become teachers of the parents, place our knowledge at the disposal of the graded schools and colleges, and bring before the young men and women the importance of the correct mechanical use of their bodies. And, after all, the human body is only a well organized piece of machinery—wearing out by incorrect use and resulting friction. It is interesting to note that one of our progressive colleges has this

*Read before the District of Columbia Medical Society, February 25, 1920.

year placed in its curriculum a course in physical education that is compulsory with every student.

That many of the individuals of the present day—classified as inefficient—can be helped by intelligent advice and instruction was proved beyond question in the overseas army. Many of these physically unfit were sent back to the base hospitals. Others, however, consisting of those with weak backs and bad feet, were formed into training battalions under the observation of experienced orthopaedic surgeons. The time was limited and the men were needed, but the work in these training battalions was remarkable. Many of the men after a few weeks of instruction and training went into combat duty. Others, for lack of time, were classified "B" and sent to the service of supply, where the work while hard did not require the same amount of physical and mental strain. At Base Hospital 114, a special orthopaedic hospital unit, there were established foot and back classes, and every convoy coming in brought new recruits of men with bad backs and weak feet. Classes were held twice daily. Attendance was compulsory, and the benefit derived was great. During the rush time, these men were formed into patient medical detachments—carried litters, acted as ward men and were used in various capacities. Many were sent back to their companies, capable of holding up their end of the work. I mention this to show that with proper training and corrective exercises these mechanically unfit individuals were made normal and capable of carrying on the most difficult work.

While the draft contained men from all walks of life—the farm, the factory and the office men of many nationalities and different home training, with varied degrees of intelligence—we can turn for further proof of relation of posture and health to one of our leading universities, to men from the better homes and with intelligent parents.

For the past few years students at Harvard, aside from the regular medical examination, have had an orthopaedic examination with special reference to posture. Lloyd Brown's findings in his examination of 746 men between the ages of sixteen and twenty-two years is rather interesting, especially so when, as he points out, at this age it would be reasonable to expect to find from every point of view a normal human being. Brown in his examina-

tion uses the schematograph, a reducing camera, and the image of the object is focused by means of a simple adjustment of the lens and by a mirror upon a horizontal piece of tracing paper, which takes the place of the ground glass used in the camera. In this way a very accurate tracing of the posture of the men is taken. Examinations are of very little value unless we can determine the normal human posture, and here so many factors have a bearing: health, disease, race, sex, emotions, occupation, etc. The classifications of flat back, round back, lordosis, and kypho-lordosis, and another given by Lovett under the heading round shoulders, round hollow back, round upper back, and flat back, while descriptive, are of little value used as a comparative measure in the examination of a number of men.

The vertical line test as used in the examination of Harvard students is quite efficient: A line drawn upward from the external malleolus or medio-tarsal region so that it passes through the trochanter or middle of the thigh would also pass through the shoulder and front of the ear. Using this test as more nearly the normal, any variations can be readily detected. This was especially so in the examination of the Harvard students, as the tracings show the exact outline of their bodies.

The most frequent variations noticed in these drawings were:

1. The variation of head and shoulder from vertical line, extending upward from the malleolus to the middle of the thigh.
2. Forward position of the thigh.
3. Relaxed abdomen.
4. Exaggeration of the normal curve of the spine.

The men were graded as follows:

Standard, or normal, graded A.

Those with one, or slight, variation from standard, graded B.

Those with only two variations from standard, graded C.

Those with a variety, or extremes, of any or all points from normal, graded D.

Of the 746 examined there were only fifty, or 6.7 per cent., in grade A; ninety, or 12.1 per cent., in grade B; four hundred and thirteen, or 55.4 per cent., in grade C; one hundred and ninety-three, or 25 per cent., in grade D. To summarize: Eighty per cent. of the group stood in either C or D, while only twenty per cent. stood with their bodies in normal, or

nearly normal, position. In order to find out the relation between posture and the general medical condition of the individuals, Brown took fifty different groupings of the medical findings. These medical findings represented only those conditions which were noted by the medical men as abnormal, or worthy of further observation. Many of these findings include not only conditions found at the examination, but also those that happened in the past history. Of these fifty headings, thirty-three occurred in class A; thirty-eight in class B; forty-two in class C; forty-four in class D. This would seem to suggest that the C and D class were more prone to sickness than A and B. Each man in these groups was asked in reference to backache. Considering the age of these men, this question was not expected to give any results. However, it was found that there were no cases in A and B complaining of backache, while twenty-six, or 6.3 per cent., of class C, and seventeen, or 8.8 per cent., of class D gave such a history.

The question of albuminuria was most interesting from a postural point of view. Grade A showed one case; grade B, one case; grade C, fourteen cases; grade D, twelve cases. The medical men had found cardiac conditions, mostly functional, in a certain number of cases—about 4.7 per cent. These were graded as follows: Grade A, 2; grade B, 5; grade C, 14; grade D, 4. Looking on it from the surgical side, we find that in these groupings the operation for appendicitis occurred one and one-half times as often in grade C as in grades A and B, while two and one-half times as many men in C and D had had two or more operations.

To return to the standard, or normal, posture, Goldthwait's description is probably the best in current literature:

"In the upright position, the poise or attitude in which there is the least strain, and consequently the correct attitude, is with the body held so that it is made as tall as possible without raising onto the toes. In this position the head is erect, the shoulders thrown back so that their center is distinctly posterior to the center of gravity, the chest is high, the abdomen is flat and the spinal curves are slightly convex backward in the dorsal region and convex forward in the lumbar region. The pelvis is inclined forward so that the axis from the promontory of the sacrum to the top of

the pubic bones is downward and forward 30° from the horizontal. In this position the anterior portion of the upper part of the sacrum, together with the last lumbar vertebra, is almost directly over the top of the great trochanter, or a little posterior to the center of the hip joint. In this position the Y ligament is made tense as well as the ilio-psoas muscle, these two structures serving to prevent the pelvis from lessening its forward inclination. In this position the ham-string muscles are tight, giving support to the knees as well as preventing an increase in the forward inclination of the pelvis. The knees are straight and the weight is received at the foot upon the astragalus with the posterior calf muscles tight, so that the heel rests lightly, and the chief strain is thrown upon the ball of the feet. The posterior calf muscles are tense, the result being that the posterior tibial and the peroneus longus by their contraction hold the tarsal bones in place, the foot thus being in the position of greatest strength, while the flexor muscles of the toes hold them in contact with the floor, giving a stable base and rendering the propulsion of the body possible with the least effort.

"The muscles of the trunk in this position are in such balance that while the anterior and posterior groups are in slight contraction, neither group is strained and but few of the ligaments are under tension. The shoulder is slightly back of the lateral median line of the body so that the weight is received largely upon the thorax, none of the muscles being in more than slight contraction, and the strain upon the posterior muscles which must occur when the shoulder is held forward is absent. The head is held erect and so balanced that while all the muscles, the anterior, posterior and lateral, are in slight contraction, each group is properly balanced by the others and none subjected to more work than they can easily perform. With the body so poised, not only is there the least possible expenditure of energy required for the maintenance of the position, but it is from this position that action is made most easily. All of the parts are in balance, so that whatever the movement, there is no waste of energy in correcting the poise or 'gathering oneself' preparatory to the action."

In the posture thus described, not only is the body in the best position for economic function, but the viscera also are benefited and are

held in the position most favorable for their function. Compare this type of individual with one of imperfect poise—head forward, rounded shoulders, flat or exaggerated curve of the lumbar spine, narrow costal angle and prominent abdomen. The very appearance of such an individual is one of inefficiency. In the exaggerated type, we have the flexed knees and so-called flat foot. In this connection, how futile it seems to fit supportive plates to the feet without paying attention to the fundamental cause—bad posture. One might as well remove the front tire that has worn from bad alignment of the wheels and put on a new tire and expect the evil to be corrected, without first getting the wheels in correct alignment.

It is not the purpose of this paper to go in detail into the many surgical and medical problems that bear close relation to poor posture. If it will bring before the Society members the importance of closer attention to the mechanics of the human body in relation to many problems, it will have served its purpose. There is probably not a specialty in medicine but will gain if the poise of the body is taken into consideration along with the general examination.

The close relation of visceroptosis and posture is apparent to the internist and the gastroenterologist. In the normal individual, the lumbar spine curves forward in such a manner that at the level of the fourth or fifth vertebra the anterior surface of the spine is nearer the front of the body than the back. The abdominal cavity at this level is relatively quite narrow, possibly not more than one-third of the thickness of the body. With muscle tissue and fat filling in the sides of the vertebral bodies, one readily appreciates the normal lack of space for organs other than a few coils of intestine. From the level of the fourth or fifth lumbar vertebra the spine inclines upward and backward, thereby enlarging on the diameters of the abdomen to allow sufficient space for the viscera which are practically all above this point.

"The posterior wall of the abdomen is made up of the spine, the upper part of the sacrum, the wings of the ilia, a portion of the diaphragm, with the free portions of the lower four or five ribs and the muscles of the loin. The sides and anterior wall of the abdomen consist practically wholly of muscle, the ar-

range of the fibers being such that the greatest elasticity exists without sacrificing the element of strength. The proper tone of this anterior muscle wall is an important part of the support of the abdominal viscera. Besides this, the viscera are supported by ligaments, by the formation of the bony framework and by the arrangement of certain structures so that definite ridges or shelves exist, upon which the organs naturally rest. When the body is erect, all of these elements work to the best advantage. All of the abdominal muscles are made tense so that the organs are held firmly together with little liability to drag out of place. The ligaments are subjected to the least strain, and the organs rest most securely upon the ridges or shelves. In this position the kidneys cannot become displaced, the stomach cannot drag downward nor can the other viscera change their normal relations to each other."

With the anatomical relation of the organs in mind, it can readily be understood why, with the drooping forward of the shoulders and rounding of the dorsal spine and flattening of the lumbar spine, with relaxation of the ligaments and muscles of the abdomen, the viscera are prone to displacement downward. And further, as is so often the case in this type, the amount of inter-abdominal fat is so little that the normal padding is practically absent.

Of further interest may be mentioned diseases of the respiratory tract, especially pulmonary tuberculosis. If we accept the classification of many writers, there are three separate and distinct types; first, the relatively normal individual; second, the slender, or carnivorous; third, the heavy, or herbivorous; with, of course, the commingling of the different types in often the same individual. In the slender or carnivorous type individual, many so commonly seen, with narrow chest, narrow costal angle, we find them particularly prone to pulmonary tuberculosis. Why this should be so can be explained partly by the fact that these individuals are usually poorly nourished, blood pressure lower than normal—suggesting a low resistance—anaemic, and frequently a disturbed interglandular secretion. This type individual usually grows rapidly and early develops imperfect poise, with lowered ribs, slight chest expansion, rounded shoulders and the usual picture of poor poise.

The gynecologist is certainly interested, for

if the abdominal organs are visceroptotic they certainly encroach upon the pelvic cavity and produce pressure upon the organs therein contained, with resulting symptoms.

Posture is of special importance to the neurologist. There can be no question but that many of our so-called neurasthenics are individuals who present the usual picture of faulty poise. Granted that visceroptosis and posture go hand in hand, Lerch makes the statement that he has never examined a neurasthenic or hysterical patient in whom enteroptosis was absent.

Osgood, quoting Swaim, declares that he saw hardly more than twenty well postured individuals among the 3,000 at Clifton Springs—and who but can remember the blanket diagnosis of neurotic spine in so many of those poorly poised individuals with back pains.

From the viewpoint of the orthopaedic surgeon, correct posture has become something real and tangible—not that correct posture will cure everything in the category of medicine, but certainly it will help those many unfortunate individuals with heretofore unsolved problems. We cannot expect to obtain perfect results in all cases, but if these unfortunates can be relieved of their symptoms and made more comfortable and efficient citizens, it is certainly worth our time.

Of far greater importance, however, is the early recognition of poor posture in childhood. If these children are taken in hand with corrective postural exercises and instruction, and the education of the parents undertaken, many will escape the problem of poor health in later years.

1621 *Connecticut Avenue, N. W.*

UNUSUAL RELAPSE IN TYPHOID FEVER.

By WM. H. HIGGINS, M. D., Richmond, Va.

The following case of typhoid fever is reported on account of the rather unique history:

The patient was a white man, age 37 years, whose previous history was uneventful, with the exception of a clearly defined attack of typhoid fever in 1901, lasting for four weeks. In 1911 he received institutional treatment for pulmonary tuberculosis with apparently satisfactory results.

In August, 1917, he was given three injections of typhoid vaccines. He remained in good health until January, 1921, when he de-

veloped a typhoid infection. His blood culture was positive for typhoid bacilli, and he ran a typical fever for two weeks, during which time rose spots appeared, and there were the usual clinical signs of an average typhoid fever without complications. After two weeks of convalescence, he returned to his work and remained well until March 23d, at which time he had a chill followed by a temperature of 103°. His blood culture was negative, and likewise his Widal reaction. His leukocytes were 7,000, with normal differential count, and a negative report for plasmodium. Aside from slight headache, there were no subjective symptoms, and his fever persisted for twelve days with the usual typhoid variations. During this period successive crops of rose spots appeared over his abdomen and, for the first time, his spleen became palpable.

There are three related points of interest in connection with this history; first, obviously the previous attack of typhoid fever did not confer a permanent immunity. In Osler's series of 1,500 cases, a history of previous infection was obtainable in only two and three-tenths per cent.; second, in spite of a previous attack of typhoid, and inoculation of three years' and four months' standing, a typical infection developed. The effectiveness of typhoid inoculations as a prophylactic measure against typhoid fever is now universally acknowledged. The only point at variance is the length of immunity conferred by the inoculation. The average period of safety is generally placed at three years; third, the most unusual point in the history is the length of period elapsing between the termination of the initial attack and the onset of the relapse, which was forty-seven days.

The diagnosis of a true relapse was made in accordance with the well-known dictum of Osler, to the effect that a relapse must be characterized by at least two of three important features of the disease; namely, a characteristic fever curve, enlargement of the spleen, and rose spots.

After a fairly complete survey of the literature, it appears that our patient showed next to the longest interval between attacks on record. Curschman, in Nothnagel's Encyclopedia of 1905, stated that in his Leipsic series the longest interval of apyrexia was 53 days. In Allbott's series, one patient relapsed after a period of twenty-one days. In the 1,500 cases

recorded by McCrae from the Johns Hopkins Hospital, the average period was six days, and the longest was forty-three days.

We have, therefore, in this history a period of forty-seven days elapsing between the attacks, which, so far as is known, is the longest interval reported in this country.

Professional Building.

Proceedings of Societies

Medical Examining Board Of Virginia.

Of 62 applicants who applied for examination, June 14-17, 1921, to practice medicine in this State, the following 59 were successful:

Thomas Henry Amos, Boston, Mass.
J. C. Anderson, Chatham, Va.
O. O. Ashworth, Richmond, Va.
F. M. Aycock, Richmond, Va.
A. A. Bailey, Newport News, Va.
J. Hugh Bailey, Witt, Va.
Carl Bishop, Riner, Va.
W. M. Bland, Portsmouth, Va.
R. H. Chilton, Ocean View, Va.
H. L. Claud, Drewryville, Va.
C. C. Cockran, Richmond, Va.
Harold C. Cox, New York City, N. Y.
Russell M. Cox, Philadelphia, Pa.
R. L. Creekmur, Portsmouth, Va.
John M. Davis, Richmond, Va.
T. D. Davis, Richmond, Va.
R. R. Doss, Richmond, Va.
W. C. Duffy, New Haven, Conn.
T. J. Fitz-Hugh, University of Virginia.
R. F. Gillespie, Pounding Mills, Va.
James N. Greer, Washington, D. C.
Philip A. Hilton, Farmville, Va.
F. E. Hinchman, Richmond, Va.
W. H. House, Oak City, N. C.
C. M. Irvin, Richmond, Va.
Baxter S. John, Baltimore, Md.
Z. B. V. Jones, Norfolk, Va.
Allen M. Kimbrough, Richmond, Va.
Bender B. Kneisley, Strasburg, Va.
James G. Lyerly, Richmond, Va.
George R. Maloney, Richmond, Va.
E. H. Marsteller, Gainesville, Va.
Wm. B. McCutchen, Richmond, Va.
James P. McNeil, Johnson City, Tenn.
Richard H. Meade, Richmond, Va.
Wm. Ross Morris, Charlottesville, Va.
Charles S. Norburn, Philadelphia, Pa.
Florence W. Owens, Richmond, Va.
Robert M. Page, Batesville, Va.
Mosby Hall Paine, Lynchburg, Va.
Thomas B. Pearman, Richmond, Va.
H. I. Pifer, Richmond, Va.
Charles W. Putney, Richmond, Va.
C. A. Ransom, Washington, D. C.
J. K. Richardson, Richmond, Va.
W. M. Robinson, Richmond, Va.
M. B. Savage, Charlottesville, Va.
E. N. Shockley, Catawba, Va.
John K. Shumate, Richmond, Va.
Beverly C. Smith, New York City, N. Y.
Joseph E. Smith, Richmond, Va.

J. H. Smith, Charlottesville, Va.
A. L. Stratford, Richmond, Va.
A. C. Thompson, Richmond, Va.
Cuthbert Tunstall, Charlottesville, Va.
H. A. Wall, Norfolk, Va.
W. Herman Whitmore, Richmond, Va.
C. T. Wilfong, Richmond, Va.
R. Hugh Wood, Richmond, Va.

The following osteopaths took materia medica to qualify for surgery:

Dr. H. S. Beckler, Staunton, Va.

Dr. C. W. Irvin, Bristol, Va.

Dr. A. Harry Semones, Roanoke, Va.

Dr. Ernest B. Grasty, Reidsville, N. C., was admitted to examination on basis of five years' previous practice outside of the State.

The medical schools with the largest representation were the Medical College of Virginia with 29 applicants; the University of Virginia with 9; and Johns Hopkins University, University of Pennsylvania, and Jefferson Medical College, with 3 each. A number of other schools had one or two applicants.

The Bedford County Medical Society

Held its regular meeting in Bedford, August 19, with Dr. Joseph A. Rucker, president, in the chair. The attendance was good, the papers were interesting and discussions helpful. Those reading papers were Drs. J. A. Rucker, Bedford; K. D. Graves and W. R. Whitman, Roanoke; and Sam Wilson and J. W. Devine, Lynchburg.

Dr. J. M. Howell, of Big Island, was elected to membership. Dr. W. O. McCabe, of Thaxton, was elected delegate to the meeting of the Medical Society of Virginia in Lynchburg, and Dr. Joseph A. Rucker was selected as his alternate.

Besides those named above, the following were in attendance: Drs. M. P. Rucker, W. L. Lyle, Alfred Claytor, E. L. Johnson, E. L. Marshall and M. W. Gibbs.

Following the meeting, supper was served by the members at the Bedford Restaurant.

W. O. McCABE, *Secy.*

The Fredericksburg (Va.) Medical Association

Held its regular meeting in that city, August 26, at which time interesting papers were presented by Dr. Lee Cooke, of Fredericksburg, and Dr. Howard Masters (invited guest), of Richmond. Present officers of this Society are Drs. Roderick Dew, of Woodford, president, and Dr. J. N. Barney, of Fredericksburg, secretary.

The National Board of Medical Examiners

Has just completed the first five years' work and with it the trial period of its usefulness.

The principle which this Board has stood for, namely, the establishment of a thorough test of fitness to practice medicine which might safely be accepted throughout this country and abroad, has been widely accepted. Since this Board was organized by Dr. W. L. Rodman, in 1915, eleven examinations have been held. These examinations have been conducted on the plan of holding at one sitting, a written, practical and clinical test for candidates with certain qualifications, namely a four-year high-school course, two years of college work, including one year of Physics, Chemistry, and Biology, graduation from a Class A Medical School and one year's internship in an acceptable hospital. These examinations have covered all the subjects of the medical school curriculum and have been conducted by members of the Board with members of the profession resident in the place of examination appointed to help them. Such examinations have been held in Washington, Philadelphia, New York City, Boston, Chicago, St. Louis, Rochester (Minnesota) and Minneapolis. During the war a combined examination was held at Fort Oglethorpe and Fort Riley. There have been 325 candidates examined, of whom 269 have passed and been granted certificates.

Starting with the endorsement of the Council on Medical Education of the American Medical Association, American Medical College Association and various sectional Medical Societies, the recognition of the Army, Navy and Public Health Service Medical Corps of the United States and certain State Boards of Medical Examiners, the certificate is now recognized, also, by twenty states, as follows: Alabama, Arizona, Colorado, Delaware, Florida, Georgia, Idaho, Iowa, Kentucky, Maryland, Minnesota, Nebraska, New Hampshire, New Jersey, North Carolina, North Dakota, Pennsylvania, Rhode Island, Vermont and Virginia, the Conjoint Board of England, the Triple Qualification Board of Scotland, the American College of Surgeons and the Mayo Foundation of the University of Minnesota.

There has been such a wide-spread demand for an opportunity to secure this Certificate by examination, that the Board has now adopted and will put into effect at once, the following plan: PART I, to consist of a written examination in the six fundamental medical sciences: Anatomy, including histology and embryology; Physiology; Physiological Chemistry; General Pathology; Bacteriology; Ma-

teria Medica and Pharmacology. PART II, to consist of a written examination in the four following subjects: Medicine, including pediatrics, neuropsychiatry, and therapeutics; Surgery, including applied anatomy, surgical pathology and surgical specialties; Obstetrics and Gynecology; Public Health, including hygiene and medical jurisprudence. PART III, to consist of a practical examination in each of the following four subjects: Clinical Medicine, including medical Pathology, applied physiology, clinical chemistry, clinical microscopy and dermatology, Clinical Surgery, including applied anatomy, surgical pathology, operative surgery, and the surgical specialties of the diseases of the eye, ear, nose and throat; Obstetrics and Gynecology; Public Health, including sanitary bacteriology and the communicable diseases.

Parts I and II will be conducted as written examinations in Class A Medical Schools, and Part III will be entirely practical and clinical. In order to facilitate the carrying out of Part III, subsidiary boards will be appointed in the following cities, Boston, New York, Philadelphia, Minneapolis, Iowa City, San Francisco, Denver, New Orleans, Baltimore, Galveston, Cleveland, St. Louis, Chicago, Washington, D. C., and Nashville, and these boards will function under the direction of the National Board. The fee of \$25.00 for the first part, \$25.00 for the second part and \$50.00 for the third part will be charged. In order to help the Board the Carnegie Foundation has appropriated \$100,000.00 over a period of five years.

At the annual meeting, held June 13th, of this year, in Boston, the following officers were elected: M. W. Ireland, Surgeon General, U. S. A., President; J. S. Rodman, M. D., Philadelphia, Secretary-Treasurer; E. S. Elwood, Managing Director.

Mr. Elwood will personally visit all Class A Schools during the college year to further explain the examination, etc., to those interested. Further information may be had from the Secretary-Treasurer, Medical Arts Building, Philadelphia.

Correspondence

Precautions Against Diphtheria.

TO THE DOCTORS OF VIRGINIA:

Our records show that diphtheria begins to increase in August and reaches its height in

November. At present more cases of diphtheria are reported than usual at this season, so we fear a bad year.

Deaths from diphtheria occur in rural sections more than in cities. This is doubtless due to the difficulty of securing antitoxin promptly in the country. To avoid this difficulty, we are making the following proposition to the doctors in rural sections:

We will furnish each doctor one package of 5,000 units and one package of 10,000 units of diphtheria antitoxin, provided—

FIRST, that the doctor will carry the packages in his medicine bag, so they will be available on his first visit to a diphtheria patient. We recommend giving antitoxin promptly upon suspicion, and not waiting for a report upon a culture. A large dose is advised.

SECOND, that the doctor agree to pay for it when used and to re-order a package. The same credit will be again extended.

THIRD, that, if the package shall not be used, the doctor will return it when it becomes outdated—that is, after the expiration of the date on the package.

We trust that you will accept this proposition. It cannot cost you anything. You will pay no money until you have used the antitoxin. Having it with you may very probably result in the saving of a life.

If you wish to accept our offer, write the State Board of Health, and this and subsequent orders will be filled promptly. Our credit offer applies to two packages.

The price list for antitoxin is as follows:

1,000 units	\$.35
5,000 units	1.35
7,500 units	2.00
10,000 units	2.25

This proposition should save many lives.

ENNION G. WILLIAMS,
State Health Commissioner.

The Truth About Medicine

In addition to the articles enumerated in our August issue, the following articles were accepted by the Council on Pharmacy and Chemistry of the A. M. A. during June:

Lederle Antitoxin Laboratories:
Pollen Antigen—Lederle (Ragweed).
Pollen Antigen—Lederle (Timothy).

During July the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

The Abbott Laboratories:
Argyn.

Hoffmann LaRoche Chemical Works:
Papaverine Sulphate Tablets—Roche.
Nonproprietary Articles:
Casein.

Book Announcements

A Manual of Gynecology. By JOHN COOKE HIRST, M. D., Associate in Gynecology, University of Pennsylvania; Obstetrician and Gynecologist to the Philadelphia General Hospital. 12 mo. of 466 pages with 175 illustrations. W. B. Saunders Company, Philadelphia and London.

The special chapter on leukorrhea alone, one of the commonest disorders for which a patient consults her physician, is worth many times the small price of this concise, valuable little book. The technic of operations and the office treatment are briskly described but with the sure touch of the well grounded man. Written from the viewpoint of gynecologist and obstetrician it is doubly worth while. G.

An Outline of Genito-Urinary Surgery. By GEORGE GILBERT SMITH, M. D., F. A. C. S., Genito-Urinary Surgeon to Out-Patients, Massachusetts General Hospital. 12 mo. of 301 pages with 71 illustrations. Philadelphia and London. W. B. Saunders Co.

This is a very satisfactory book for the general practitioner. It covers all the essential points in the symptomatology, etiology and pathology of genito-urinary diseases. The treatment is practical and up to date. The case histories given are from the author's own cases, either in private practice or from his clinic at the Massachusetts General Hospital. It can be recommended in every way. S.

The Health Officer. By FRANK OVERTON, M. D., D. P. H., Sanitary Supervisor New York State Department of Health, and WILLARD J. DENNO, M. D., D. P. H., Medical Director of the Standard Oil Company. Octavo of 512 pages with 51 illustrations. Philadelphia and London: W. B. Saunders Co., 1919.

This book is for health officers—tells them what to do, how to do it, and why. As the authors have had many years' experience in public health work, it may be considered of good value. In fact, students, social workers, nurses, etc., will be much benefited from studying it from cover to cover. G.

Clinical Microscopy and Chemistry. By F. A. McJUNKIN, M. A., M. D. W. B. Saunders Company, Philadelphia and London. 1919.

The ground covered in this volume of 381 pages is mainly that of the routine laboratory

technic employed in tests made in connection with every day experience. The subject matter is arranged under five headings: Blood; Sputum, Serous Fluids and Exudates; Urine; Gastric Contents, Feces; and an additional chapter is entitled Histologic and Autopsy Technic. Under each of these headings methods employed in interpreting the significance of clinical findings are carefully explained. Especial emphasis is made by the author on the clinical application of these chemical and biologic methods. As a text book it is clear and comprehensive and as a reference book for those whose memories need occasional refreshing in technical procedure, it should prove very helpful. The chapter on the histologic work of a hospital laboratory as well as that on autopsy technic are a valuable addition to the main subject matter and many helpful illustrations serve to further clarify the text. S.

Diet in Health and Disease. By JULIUS FRIEDENWALD, M. D., Professor of Gastro-Enterology in the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, and JOHN RUHRAH, M. D., Professor of Diseases of Children in the University of Maryland and College of Physicians and Surgeons, Baltimore. Fifth edition, thoroughly revised and enlarged. Philadelphia and London: W. B. Saunders Company. Octavo of 919 pages. Cloth \$6.00.

This standard work appears in its fifth edition, which bears testimony to the favor it has met in the medical profession. The subject of dietetics is growing in importance and it behooves us to have and study some authoritative work like the one before us. Among the new articles which we observe in this edition we may mention the ones on vitamins, amino-acids, food allergy, Sippy's diet in peptic ulcer, etc. Many articles have been revised, in others new material has been added, as in the chapters on infant feeding, diabetes, acidosis, pellagra, etc. This is an exceptionally high-grade book and cordially recommended.

S.

Freaks of Population.

A curious freak is shown in the latest Austrian census of population. There are 300,000 fewer children under 10 years of age in that country than in 1910, while the number of men between 40 and 60 years of age has increased by 120,000. This is explained, it is believed, by the fact that adults could better stand the privations of the last few years than children.

Hope To Enlarge Pine Camp.

It is understood that a resolution is to be offered in the Richmond City Council, asking for \$50,000 for the enlargement of the capacity of the city's local tuberculosis sanitarium—Pine Camp. The present capacity of the camp is thirty-seven beds, but there is a long waiting list, so it is hoped an appropriation may be made so as to increase the total capacity to sixty-five beds and make other necessary repairs and additions. The death rate from tuberculosis in Richmond is now stated to be only one-third of what it was fifty years ago.

Work of T. B. Clinics.

In the last five free chest clinics held by the Virginia Tuberculosis Association in Page, Rockbridge, Buckingham, Botetourt, and Highland Counties, there were found seventy-eight active cases of tuberculosis and eighty-eight cases with suspicious symptoms. Nine hundred and fifty-five cases were examined and large numbers who attended the clinics had to be turned away because the doctor was not able to see them all.

The people show an eagerness to be examined and seem anxious to take advantage of the instructions given.

Beer Not Yet To Be Used As Medicine.

Beer as a medicine was doomed the last of August by the Treasury, unless Congress, after its recess, should fail to enact the Willis-Campbell anti-beer bill. Secretary Mellon, in conference with Internal Revenue Commissioner Blair, decided that regulations already drawn, which would permit physicians to prescribe a case of beer at a time with no limit on the number of prescriptions, should be held up by the Treasury, pending investigation of the medical beer question by Congress.

The U. S. Civil Service Commission,

Washington, D. C., is requesting applicants for the positions of roentgenologist, associate roentgenologist, assistant roentgenologist and junior roentgenologist, applications to be rated as received until December 1, 1921.

Also, applications for position as associate in clinical psychiatry and psychotherapy will be rated as received until November 1, 1921.

Both examinations are open to all citizens of the United States who meet the necessary requirements, both men and women. If interested, secure detailed information from the above named Commission.

Virginia Medical Monthly

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Editorial

Pellagra In The South.

The U. S. Public Health Service has issued statistics on the alarming increase of pellagra in the South. The figures show that there may be double the number during the present year as compared with last year, and that in some parts of the South the increase will triple previous records. In one State where the figures are at hand, 1,817 cases developed in May, 1921, in comparison with 677 cases in May, 1920. The situation is said to be due to the failure of the cotton crop, making it necessary for the small farmers to resort to salt pork, corn bread and molasses as their daily diet without alteration. (J. A. M. A., July 30, 1921. Pg. 385.)

Virginia has cause to feel pleased that returns, available, do not disclose an increased incidence of pellagra in this State. In our south country, according to reports, there has been a marked increase of this disease within the past year. There is a fear of a greater number of cases this year in certain localities. There is no occasion for undue anxiety, but there is every reason for the profession and the public to exercise every measure, that it is possible to command, to teach the use of a balanced diet, particularly emphasizing eggs, milk, milk products, and vegetables; to inculcate the tenets of personal hygiene, particularly the careful cleaning of the teeth and mouth after eating; to teach rules of adequate rest; careful attention to the body habits; and the maintenance of body weight to proper standard; to instruct persons affected with chronic ailments, of digestive, cardio-vascular, respira-

tory or nervous system, to apply to physicians for treatment and instruction.

Poverty, ignorance, and lack of co-operation are obstacles to be overcome. The encouragement of rural people to cultivate vegetable gardens, to raise chickens and to keep cows and to diversify the farm products in order that a greater variety of foodstuffs may be more easily obtained, is another way by which the health and strength of any community may be protected, not only against pellagra but also against other diseases, whether a deficiency or infectious disease.

In view of its greater incidence, physicians may be on the alert to detect in patients the symptoms of pellagra. The disease during its early manifestations seems to yield with marked effect to dietary and remedial measures, while the late or grave types withstand the most vigorously conducted regimen.

Pellagra sine pellagra, showing its symptomatology in the gastro-intestinal tract, or in the nervous system, or in both, is a particularly insidious and evasive form of the disease.

HOW DOCTORS MAY BEST HELP RELIEVE THE SHORTAGE OF NURSES.

"If every physician in the state will look his responsibilities in this matter squarely in the face and attempt to get one of the best educated, best bred and most capable women in his county interested in nursing right away, he will be performing a great public service."—(Ky. Medical Journal.)

The Trained Nurse.

The country over there is a shortage of nurses. This shortage is due to conditions which we need not now, here, undertake to discuss. The need is evident to every doctor.

The best way to secure relief is for each physician, as he goes about among his clientele, to make it a personal matter to encourage properly equipped young women to take up the profession of nursing. There probably is no training through which a young woman may go, upon the threshold of life, more helpful than that found in a training school for nursing. From the standpoint of physical fitness, the training school for nurses is a splendid institution: regular hours, wholesome food, adequate physical exercise, make for a well set-up body for after life. From the standpoint of medical science, the training school for nurses teaches the laws of the body in health

and disease, and inculcates a wealth of knowledge which must fortify every woman through whatever after-life she may pass. From every standpoint the training of the nurse, when conducted in a training school of high moral, ethical and scientific standards, is a valuable asset to any woman, and no doctor may feel any misgivings in urging a proper young woman to seek opportunity to engage for a course in a high standard training school for nurses, but rather every doctor may feel that he is doing a good to the young woman and a good to the public.

Doctor! look out for qualified young women and encourage them to enter the nursing profession!

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Good Roads and the Legislature.

This legislature will be unique in one particular. Probably never in the history of this Commonwealth has the personnel of the representatives of legislature been more directly selected by medical men and medical influences. Probably never before have members of the legislature been more truly selected to do a big medical thing for Virginia. This is a tremendous fact which is fraught with great possibilities.

While there may be differences of opinion in the legislature where to locate the new medical school, there are other problems intimately affecting medical matters and health problems of our State, on which there is and can be no division. This significant fact that the legislature represents in an unprecedented way medical opinion and thought may be taken advantage of in the development of our road system. Let the doctors exert every possible influence and see if Virginia cannot get permanently built roads. This is a health, a medical and an educational problem, of great importance, and one which this legislature should meet in a masterful way. Ways and means should be provided for State-wide per-

manent improvement of the highways of our State on a big up-to-date engineering plan.

Let this generation plan and build for this and succeeding days in order that Virginia may catch up with other States in the next fifty years.

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The Virginia Medical Monthly and the Medical School.

For many months, unsolicited, we have conducted a department on medical education. In this department there have been printed extracts from the writings of foremost men of the country as to what constitutes a modern medical school. This was done with the hope of interesting our readers in the subject and preparing our minds, somewhat, for the issue that is now upon us. This department has been conducted absolutely impartially, so far as we are aware.

The question of the location of the new school has not been touched upon by us editorially. The editor, in the editorial columns, has followed impartial lines of action, because he believed he had no right to use the columns of the editorial page on a question so sharply contested among members of this Society. This journal is the property of the Medical Society of Virginia. The Society has not expressed itself. If it does express itself for one location, then and only then may the editorial columns be used for the purposes of advancing that choice.

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Every one must feel that Virginia will de-
The Medical School.

cide this important matter in the right way. Certainly there has been an unprecedented State-wide agitation and public discussion of this problem for months. The fact that should be uppermost in every right thinking mind is to evolve, out of these two medical schools, a better school, in order that Virginia people of today and those of tomorrow shall be served by as good a type of physician as this country can produce. Virginia should not be satisfied with anything less. If what we have now is satisfactory, the conclusions of the Medical Commission are wrong and the general opinions of foremost medical men of the State are wrong.

Neither school is satisfactory as it now is. The time has come for Virginia to have a great medical school. It should be capable of instructing adequately a reasonably large number of medical students in the elementary subjects of medicine; it should command ambulatory and hospital patients of sufficient number; it should be manned by foremost medical teachers assisted by a large corps of laboratory and clinical teachers.

When a student graduates from the Virginia supported medical school he should be a well-trained man.

News Notes

To the Members of the Medical Society of Virginia.

As the time approaches, we wish to keep before you the date and place of the annual meeting of the Medical Society of Virginia, viz., October 18th to 21st, inclusive, Lynchburg, Va.

The local committee of arrangements is already active in making ample preparations and we believe the needs of the organization at this meeting will be well cared for. The annual session held here in 1913, had the largest attendance of any previous meeting outside of Richmond and our facilities then received the commendation of the officers of the Society and were altogether adequate. We hope to have even a larger attendance this time and to surpass our former efforts in providing for the comfort and pleasure of the members and guests.

Dr. F. O. Plunkett, Lynchburg, Va., is looking after the housing facilities and would be pleased to have all who desire lodgings re-

served in advance communicate with him. Have him reserve your room as early as possible.

Dr. Robert D. Caldwell, Lynchburg, Va., has charge of arrangements for the Scientific Exhibit and those interested will please address him. The Commercial Exhibit this year promises to be unusually good, judging by the large number who have already engaged space.

Mrs. R. M. Taliaferro is in charge of the preparations for the entertainment of visiting ladies and proposes to see that their time here is pleasantly occupied.

GEO. J. TOMPKINS,

Chairman Local Com. Arrangements.

On To Lynchburg!

Time for the meeting of the Medical Society in Lynchburg is approaching rapidly and it is time for those to fall in line who expect to attend. Have you made your reservation? There is a plenty of room for every one who will wish to attend, but, naturally, the best rooms will go to those who engage them in advance. The scientific program promises much of interest and an unusually large number of spaces have been engaged for the commercial exhibit.

This will make the fifth time in the history of the Society that it has met in Lynchburg and the hospitality on former occasions is so well remembered that it leaves nothing to be said. Doctors are expected to bring their wives and daughters, and the Lynchburg ladies will look out for their comfort and entertainment. An automobile ride has been planned for the ladies to visit Sweet Briar College, Wednesday afternoon, and a dance at the Oakwood Country Club for Thursday evening.

Component County Societies which have not appointed their delegates should do so at once and send their names to the Secretary-Treasurer of the Society, G. H. Winfrey, Richmond, so there will be no delay in having them seated in the House of Delegates.

Good Work Being Done By The Va. T. B. Association.

To date the Virginia Tuberculosis Association has held four day free chest clinics in twenty-eight counties, and has twelve more scheduled before the end of the year. While reports have not yet come in from two of these clinics the records in hand show the following results:

Total examined, 4,532; active cases of T. B.

found, 345; suspicious cases of T. B. found, 517; arrested T. B., 96.

The findings in each case have been reported to the family physician of the patient, together with information regarding diseased tonsils, defective teeth, heart trouble, etc., noticed by the examiner. The active and suspicious cases of tuberculosis have been visited in their homes following the clinic by the Association's nurse, who gave instructions for home care or filled in the application for admission to a sanatorium, in accordance with the instructions of the clinician, and in co-operation with the family physician. To those needing them a month's supply of sputum cups with holder, and paper handkerchiefs, were furnished by the nurse, in addition to tuberculosis literature issued by the Association.

The largest clinic of the year took the form of a tuberculosis demonstration and was held in Petersburg, at the new Health Center, from September 5th to 10th, inclusive. The following well known tuberculosis specialists acted as examiners, four being in constant attendance each day: Drs. E. E. Watson, Mt. Regis Sanatorium; T. N. Davis, Lynchburg; C. L. Harrell, Norfolk; W. B. Martin, Norfolk; Garnett Nelson, Gerald A. Ezekiel and James Smith, all of Richmond.

Prior to this clinic, a great deal of publicity was given to it by the local ministers, physicians, Chamber of Commerce, police and visiting nurses.

The conduct of clinics and other activities of the Association are made possible by the sale of the Christmas Seals. Last year the sales in Virginia amounted to \$54,075.35. Five per cent of this was given to the National Tuberculosis Association (as by all states) for research and administrative work.

From observations made throughout the State, Mr. Spear, Executive Secretary of the Virginia Tuberculosis Association, states that the crying need of this State is for a Free Bed Sanatorium for the treatment of all stages of pulmonary tuberculosis.

Traveling Libraries Are Free.

Do you know that the Virginia State Library will lend you and your neighbors a collection of from twenty-five to fifty books FREE? Each collection contains books of fiction, poetry, travel, history, biography, science and other branches of literature, and the collection, borrowed by your school or community, may be kept for six months or longer. There are

books on farming, dairying, fertilizing, draining, the care of cattle, sheep, hogs and other animals, orcharding, bee-keeping, etc., and all are free.

Though the books are for all classes of our Virginia people, it is probable that the needs of those of rural districts are more particularly kept in mind when new books are purchased, as it is the especial desire of those connected with the State Library that the books go into the districts of the State farthest removed from towns and railroads, as people in these districts need them most.

For further information as to the books in the various collections and also for application forms, address H. R. McIlwaine, State Librarian, Richmond, Va.

Child Welfare in Belgium.

Through the second International Conference on the Protection of Childhood, held at Brussels, from July 18 to 21, the attention of the world has been called to the program Belgium is working out for the conservation of childhood. The first step in the medical reconstruction of industry after the war was the establishment of an independent Labor Medical Service, which includes in its function the protection of expectant and nursing working women and the care of the health of working children.

In the United States, eighteen States provide for the physical examination of every child entering industry, but no State has provided for examinations of working children at regular intervals. Belgium has adopted the advanced program of a medical examination for every juvenile not later than a month after he has entered an industrial occupation, to be repeated once a year until the child reaches eighteen, and oftener in cases of disease.

A national children's board has been established, which is maintained by public and private funds, and which supervises and supports child welfare organizations meeting certain conditions. The child welfare program includes the periodical free examination of children under three years of age brought by their mothers for examination; the establishment of free medical dispensaries for expectant mothers; the diffusion of knowledge relating to infant health and maternal nursing; and the supervision of boarded-out children under seven years of age. The cost of child wel-

fare work will be borne one-half by the state, one-fourth by the province, and one-fourth by the municipality. Provincial and municipal boards are appointed by the national board, and advisory committees are provided for.

The Southwestern Virginia Medical Society

Will hold its regular fall meeting in Marion, September 21 and 22. There are fifteen papers listed for this meeting, three of which are by invited guests. Every preparation is being made for the comfort and entertainment of the visiting physicians and this meeting is expected to be one of the most largely attended and best meetings in the history of the Society. Dr. Z. V. Sherrill, of Marion, is chairman of the local committee of arrangements, and he is being assisted by Drs. G. A. Wright, E. H. Henderson, S. W. Dickinson, and Chas. B. Baughman, all of Marion. Drs. W. R. Rogers, of Bristol, and E. G. Gill, of Roanoke, are president and secretary-treasurer, respectively, of this Society.

Clinic in Warrenton.

During the summer, a nose, throat and ear clinic was held in Warrenton, Va., and individual citizens and various local organizations contributed in every way to its success. There were 110 applicants for treatment, but as some were too late and a few above age, only 94 were operated on. Of these 61 were white and 33 colored. The success of this clinic was largely due to the untiring efforts of local doctors. Dr. James Morrison, of Lynchburg, with two able assistants, was in charge of the operations.

Dr. C. C. White,

Of Mathews, Va., had the misfortune to lose his offices in a fire which wiped out the business district of Mathews C. H., on August 23.

Eliminate Medicine Tax.

According to the Associated Press, elimination of taxes on proprietary medicines was agreed upon on August 19, by the House Ways and Means Committee, which approved a number of other changes in the Republican tax bill.

Dr. P. S. Roy,

Of Washington, D. C., was one of the August visitors at Tappahannock, Va., which was the Doctor's native home.

Appointments on State Board of Health.

In a list recently announced by Governor Davis, Dr. Edward McGuire was reappointed to the State Board of Health for a term of four years, from the City of Richmond; Dr. Harry T. Marshall, University, was reappointed for a

term of four years to represent the Seventh Congressional District; and Dr. Hugh J. Hagan, Roanoke, was appointed for a term of four years to succeed Dr. Geo. B. Lawson, Roanoke, as representative from the Sixth Congressional District.

The American Roentgen Ray Society

Is to hold its annual meeting in Washington, D. C., September 27-30, under the presidency of Dr. Arthur C. Christie, of that city. Dr. H. E. Potter, of Chicago, is secretary of the Association.

Dr. John W. Carroll,

Of Lynchburg, Va., spent a vacation in August, with his family, at Mountain Lake, Va.

Dr. Loren E. Cockrell

Has returned to his home in Reedville, Va., after a visit to Washington, D. C.

Dr. R. H. Woolling,

Of Pulaski, Va., was a recent visitor in this city, on his way to Virginia Beach.

Married—

Dr. Peyton Moncure Chichester, city medical inspector of Richmond, Va., and Miss Marie Cunningham, Savannah, Ga., August 18.

Lt. James Darden Rives, M. C., U. S. Navy, and Miss Grace Kindred Sebrell, of New York City, at Virginia Beach, August 5. Dr. Rives graduated from the Medical College of Virginia in 1916 and served an internship at the Johnston-Willis Sanatorium, this city.

Helps Reduce High Cost of Municipal Expenses.

Dr. B. Rosece Gary, coroner for Newport News, Va., who for six months received an average of \$93 a month, wrote the city manager and suggested that the Newport News City Council pay him only \$75 a month thereafter. The suggestion was accepted with appreciation by the authorities.

Harvard's School of Public Health Receives Gift.

It was recently announced that the School of Public Health of Harvard University has received from the Rockefeller Foundation an initial gift of \$1,785,000, with the promise of an additional amount, not to exceed \$500,000, should the growth and development of the school require it. This school was organized in 1910, and gives a general course for the training of public health officers and special courses in preventive medicine, tropical medi-

cine and industrial hygiene. This gift will enable the school to extend its work, especially in the line of research work. There are now in this country ten schools for the training of health officers—not only for physicians but for all who may wish to fit themselves for useful careers in up-to-date public health work.

Use Only Regularly Licensed Salvarsan.

The high price of arsphenamine (salvarsan) is a constant incentive to marketing useless fake substitutes. Large quantities of such have recently been detected in New York City and elsewhere. These products should not be bought from unknown persons. The U. S. Public Health Service renews its advice against the use of any arsphenamine not licensed and regularly tested by the Hygienic Laboratory of the Service.

Dr. Clarence Campbell,

Of Sparta, Va., with a party of men from Caroline County, spent a week in August on a fishing trip on York River.

Dr. E. J. Nixon,

Petersburg, Va., suffered two broken ribs as the result of an automobile collision, about the middle of August.

The Cincinnati Health Exposition

Will be held in that city October 15-22, under the auspices of the Public Health Federation. Approximately 30,000 square feet of floor space in the two main exhibit halls will be occupied by non-commercial exhibits, so arranged as to completely encircle the commercial exhibits. The aim of this exposition is to teach the people of Cincinnati the road to health.

Dr. Lynch Heads American Legion in Virginia.

Dr. Junius F. Lynch, of Norfolk, Va., was elected department commander of the American Legion, at the meeting of the Legion in Norfolk early this month. The selection of Dr. Lynch was a very happy one, as he saw a great deal of service during the World War and prior to that time was connected with the Virginia National Guard. Next year's meeting will be in Charlottesville.

Good Health Conditions.

The records of the Lynchburg, Va., Health Department show that no death occurred in that city between August 13 and August 21. This is the best record shown by that city in the past ten years, for which time complete records are available.

While not so good as the above report, Rich-

mond showed the lowest death rate for August, 1921, of any August in the last ten years.

Succeeds Dr. I. S. Stone.

Dr. Robert Y. Sullivan, of Washington, D. C., has been appointed gynecologist to the Columbia Hospital for Women, to succeed Dr. I. S. Stone, resigned, after thirty years of service. Dr. Stone was made emeritus gynecologist by the board of directors.

The National Board of Medical Examiners,

After operating for five years, is now changing its plan of examination. As the work of this Board is so generally recognized, not only in this country, but also in Europe, we are elsewhere in this issue publishing in full an article received from its secretary, Dr. J. S. Rodman. This should be of interest to all prospective applicants for examination to practice medicine in this country.

Drs. Smith and Williams Associated in Practice.

Drs. James H. Smith and Carrington Williams, of this city, have moved their offices to 400 East Franklin Street, where they will be associated in practice.

Dr. Smith will limit his practice to internal medicine and Dr. Williams will confine his to surgery and urology.

First Aid Kits For New Orleans Policemen.

It is announced that all motorcycle and wagon patrolmen in New Orleans have been provided with first-aid kits. Axes and crowbars will be added to the patrol wagon equipment for service in wrecks and other accidents. New Orleans is said to be the first American city to adopt such a plan.

Span of Life Lengthened.

According to a statement made by the secretary of the American Insurance Union, which is to hold its quadrennial meeting in Columbus, O., September 20-22, the span of man's life has been lengthened fully four years within the last quarter of a century. Improvements brought about by sanitation and other health measures have been contributing factors to produce this state of affairs.

Dr. and Mrs. E. W. Peery

Have returned to their home in Lynchburg, Va., after a visit in the mountains of western North Carolina.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons

Will hold its annual meeting in St. Louis.

September 20-22, under the presidency of Dr. Henry Schwarz, of that city. Dr. E. Gustav Zinke, of Cincinnati, is secretary.

Dr. R. Bruce James

Has been re-elected vice-chairman of the Danville (Va.), School Board.

The North Carolina Orthopedic Hospital

Has been opened at Gastonia, N. C. Children whose parents are unable to pay will receive treatment free; others will be charged a moderate fee.

Dr. Wade H. Frost,

A member of the '03 class, Medical Department of University of Virginia, and recently surgeon in the U. S. Public Health Service, has been appointed head of the department of epidemiology and public health administration in the School of Hygiene and Public Health, Johns Hopkins University, Baltimore.

The Virginia Tuberculosis Association

Is to have a conference at Jefferson Hotel, this city, October 6. It is expected that more than a hundred health workers will be in attendance. Drs. E. C. Levy, Miss Nannie Minor and Dr. R. K. Flannagan, all of Richmond, compose the committee arranging for this conference.

Status of Pellagra in the South.

According to statement recently issued from Washington, it is estimated that there have been 5,000 deaths in 100,000 cases of pellagra in this country in 1921. A definite increase in pellagra was reported in Alabama, Arkansas, Mississippi, Oklahoma, Texas and probably in North and South Carolina, while some evidence also indicates an increase in Georgia. In Kentucky and Virginia evidence points to a decided decrease in the incidence of this disease.

In this connection, we may state that Surgeon General Cumming has instructed public service officials to attend conventions of agents and demonstrators to be held in the Southern States during the coming year, and deliver lectures on pellagra and preventive methods. The first meeting of this kind scheduled in Virginia is to be at Blacksburg, October 15, 1921.

National Cancer Week.

An educational campaign against cancer will be held throughout the United States and Canada from October 30 to November 5, 1921. This is the first attempt on the part of the American Society for the Control of Cancer to carry out

a uniform campaign at one time throughout the country and it seeks the co-operation and assistance of all local and State boards of health, State and county medical societies, nursing and other organizations. Those interested in the success of this campaign should write at once for information to Headquarters Office of the Society, at 25 West Forty-fifth Street, New York, N. Y.

Dr. W. D. Tewksbury

Has resigned as superintendent of the Tuberculosis Hospital of the District of Columbia. Dr. Joseph W. Peabody, resident physician of the hospital, has succeeded him.

Dr. G. A. L. Kolmer

Has been appointed professor of educational hygiene at Roanoke College, Salem, Va., for the coming session.

Personal Responsibility for Transmission of Venereal Disease

Has been upheld by both civil and criminal courts, says the U. S. Public Health Service. In Oklahoma a man has been sentenced to five years in the penitentiary for infecting a girl with syphilis. In Nebraska the court upheld a doctor who warned a hotel keeper that one of his patients, a guest at the hotel, had syphilis and had refused treatment and was consequently a menace to the public health. In North Carolina a woman has been awarded \$10,000 damages against her husband for a similar infection, and the Supreme Court upheld the judgment.

Dr. William R. Weisiger,

Who has been visiting his sister in this city, has returned to New York City to resume his duties on the House Staff of the Manhattan Eye, Ear and Throat Hospital. Dr. Weisiger has been in New York since July, 1919, and will complete his service at the above hospital in October, 1922, after which he will return to Richmond to practice his specialty.

Dr. and Mrs. R. L. Raiford,

Of Sedley, Va., are home again after a delightful automobile trip, visiting friends in Pennsylvania and New Jersey.

Dr. S. H. Toy,

Stony Creek, Va., has gone again to Lakeland, Fla.

Vacations of Some Richmond Doctors.

A party, consisting of Drs. A. L. Gray, McGuire Newton, P. V. Anderson, W. T. Graham and P. W. Howle, have returned home after

an automobile trip through the Valley of Virginia and to Northern cities.

Dr. T. F. Gill enjoyed a vacation spent with relatives near his old home in Fauquier County, Va.

Dr. and Mrs. M. W. Peyser are home again after a four weeks' motor trip through the New England States.

Dr. E. T. Gatewood and family spent their vacation on Long Island, N. Y.

Dr. and Mrs. Joseph Bear spent their vacation on a motor trip through the Valley of Virginia.

Drs. B. R. Tucker and Stuart N. Michaux were at Mountain Lake, Va., for sometime in August.

Dr. Robert C. Bryan spent the late summer season with his family at Biddeford Pool, Maine.

Dr. and Mrs. Stuart McGuire, in August, took a motor trip to Canada and on their return stopped to visit friends in Maine.

Dr. and Mrs. J. Morrison Hutcheson have returned home after a motor trip to Staunton and Rockbridge Alum Springs, Va.

Dr. Douglas Vander Hoof spent the month of August at Lake Placid in the Adirondacks.

Dr. J. A. White spent his usual vacation at White Sulphur Springs, W. Va.

Paris Has Large Number of Physicians.

According to the *Journal of the A. M. A.*, of the 22,990 physicians in France and its colonies, 5,415 are located in Paris. This would seem to indicate a greater shortage of physicians in rural sections of France than in our own country.

Dr. H. L. Baptist,

Who has made his home at Ivy Depot, Va., for a number of years, has now moved to University P. O., Charlottesville, Va.

Commander J. B. Mears, U. S. N.,

Of the U. S. S. Arizona, is with the fleet which has been transferred to the Pacific Station, via San Francisco, Cal.

Dr. A. R. Gray,

Who has recently been located at Wilkesboro, N. C., is now at Bentonville, Va.

Dr. W. P. Carr,

Who has made his home in Washington, D. C., for many years, has given up the practice of medicine and moved to Summit Point, W. Va.

Dr. C. M. Byrnes,

Of the Neurological Department of Johns

Hopkins Hospital, was a recent visitor in this city on his return to Baltimore from a vacation spent in western North Carolina.

Dr. G. O. Crank,

Of the class of '16, Medical College of Virginia, has recently located in Lynchburg, Va., and has been appointed city physician there, vice Dr. D. P. Scott, resigned.

Dr. R. P. Bell

Has returned to his home in Staunton, Va., after spending his vacation at his camp near Deerfield, Va.

Dr. Kenneth Bradford

Returned to his home in Staunton, Va., about the first of September, after a vacation spent at Warm Springs, Va.

The Southern Medical Association

Is to hold its fifteenth annual meeting November 14-17, 1921, at Hot Springs, Ark.—"the Carlsbad of America." So famed is this place as a health resort, that it is likely to draw a large attendance of the doctors, that they may see for themselves this place of so much interest to which they have been referring patients for many years. Reduced railroad rates may be secured on the identification certificate plan, which may be secured upon application made to the Association office, in Birmingham, Ala.

Dr. Carroll A. Davis,

Of Eagle Rock, Va., left September 1, to take a course in eye, ear, nose and throat work at the Baltimore Eye, Ear, Nose and Throat Hospital. He states that he has left a good opening for some doctor looking for a location.

Dr. B. B. McCluer,

Who has for some time been located at Eckman, W. Va., has returned to Virginia and is now at Bon Air.

Dr. Robert Whitehead,

Of Meherrin, Va., recently visited relatives at Amherst, Va.

Dr. and Mrs. Edward Sandidge

Returned to their home in Amherst, Va., the last of August, after a motor trip to Northumberland County, Va.

Are You a Member?

Entirely aside from its general public health campaign and its work with European children, the American Red Cross spent last year on the disabled soldiers alone \$10,000,000. It

took in an aggregate of \$6,000,000 in dollar membership dues.

The work for the soldiers must go on. Their numbers are increasing daily, and a thousand a month are reporting for treatment. Obviously, if the Red Cross is to handle even this one task with any degree of adequacy, the people must support it with more enthusiasm.

The Annual Roll Call this year will be held November 11-24. It is the time set for members to renew their memberships and for new members to join. The dues are one dollar. Everyone who is interested in seeing the disabled soldiers receive continued Red Cross service should join.

Dr. Ralph E. Duncan.

Formerly of this State and who still retains his membership in the Medical Society of Virginia, has notified us of his removal to 1212 Benton Boulevard, Kansas City, Mo.

For Sale.

Nice 10-room dwelling, on 1¼-acre lot, at Chesterfield Courthouse. Improved roads in all directions. Long distance phone. Splendid location for a *Doctor*. Price, \$3,000. Write Walter N. Perdue, Chesterfield C. H., Va.—(Adv.)

Obituary Record.

Dr. Russell Stewart Wingfield,

Only child of Mr. and Mrs. J. Tyree Wingfield, of this city, was seriously burned August 14, in a fire which destroyed the American Red Cross children's hospital, at Salonika, Greece, and died August 20, after a week's fight against shock and nephritis. Funeral services were held at the A. R. C. headquarters in Salonika, full military honors being paid by a detachment from the Greek regular army. The body was then shipped home.

Upon completing his academic education at local schools, Dr. Wingfield studied medicine at the Medical College of Virginia, from which he graduated in 1920. During his senior year at college, he served an internship at Sheltering Arms Hospital, this city. Later he was appointed an interne at Stetson Hospital, Philadelphia, from which place he entered the Red Cross service and went abroad last February. He was immediately put in charge of the children's hospital at the Kalamaria Refugee Camp. When the fire broke out in the dispensary, Dr. Wingfield succeeded in saving all the

patients and personnel, with the exception of one Greek interpreter. Dr. Wingfield, however, suffered severe burns about his face and arms, which resulted in his death. By his enthusiasm and interest in his work, Dr. Wingfield had won the affection and esteem of those associated with him at the hospital. He was a young man of high moral integrity.

Dr. Herman Lee Poff,

Of Ferrum, Va., died at a hospital in Roanoke, August 9, as a result of gun shot wounds received several days prior to that time. Dr. Poff was 34 years of age and prominent in his section. He was a graduate from the Medical College of Virginia in 1912. Shortly before his death, he had presented his application for membership in the Medical Society of Virginia to come before the membership committee at this year's meeting.

Dr. Howard Wheelwright Kline,

Of Vacluse, Va., died at a Richmond hospital August 15, after a short illness. While on a vacation in West Virginia, he was taken with acute appendicitis and was brought to this city. Complications developed several days after the operation, which resulted in his death. He was a graduate of the Medical College of Virginia in 1920, after which he served an internship at Johnston-Willis Sanatorium, Richmond. He was 43 years of age.

Dr. Archibald McDowell Bynum,

Of Valentines, Va., a member of the Medical Society of Virginia, died July 18, at the age of 32 years. He received his medical diploma from the former University College of Medicine, Richmond, in 1913.

Dr. Floyd W. McRae,

A prominent surgeon of Atlanta, Ga., was found dead in his room, August 13, as the result of a revolver wound. He was 59 years of age and is survived by his wife and two sons. Dr. McRae graduated from the Atlanta Medical College in 1885, and later took post-graduate courses in New York. He held membership in a number of the surgical associations of this country.

Dr. Hansell Crenshaw,

A well known neurologist of Atlanta, Ga., died in that city August 20, after a short illness. He was 43 years of age and a graduate from the Atlanta College of Physicians and Surgeons in 1900. During the war, he served in France with the Emory unit.

Fifty-second Annual Session, Lynchburg, Va., October 18-21, 1921

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RUPTURE OF THE HEART.*

By J. S. DAVIS, M. D., University, Va.

A broken heart spells the fate of many an anguished bosom when at last forever stilled, and constitutes the designation of a large number of those lost souls with which the sombre imagination of poets has peopled the realm of the tortured shadows. Whenever pronounced in history or literature, it claims at least the passing tribute of a sigh. It is very much more common in fancy than in fact. I have seen but the one case whose striking features are the excuse for this paper. Of course, I refer to spontaneous, not traumatic, rupture. It is a relatively rare condition, if correct inferences can be drawn from a search of modern literature, for there are reports of only six cases in the index medicus since 1914, despite the horror of war. Two of these occurred in France, two in England, one in Germany, and one in this country. All were in elderly males except two—a French child with a diseased heart, and an English maiden of five years with congenital syphilis. Kroll is said to have collected three hundred and twenty-two cases in all history up to ten years ago, but eight years later these had been reduced by a critical analysis to one hundred and eleven. The condition is not listed at all in the index of monographic medicine. This rare and serious accident may be partial or complete, the former term implying laceration of the trabeculae, liberating the chordae. Complete rupture consists in a break through the total diameter of the heart wall, lacerating some fibres and separating others. The earliest recorded case is that of the Saviour, whose death upon the cross has been described in its physical aspects in a whole volume and shown to be probably due to this lesion.

The chief seat of the rupture is the anterior

wall of the left ventricle, but it may occur anywhere else. In some of the apparently traumatic cases, the violence seemed to be altogether insufficient to produce so terrible a lesion, as often the overlying skin and intervening tissues were not even bruised. Shell concussion was responsible in one case, and the impact of a cork from a pop-gun in another, when rupture of the heart was found at autopsy, as the only pathological change present. The uninjured pericardium in these cases was full of blood.

CAUSES.—This accident never occurs in a normal organ. Fatty changes are usually present. Aneurism of the wall, or sometimes acute softening from coronary embolism, suppurative myocarditis, or gumma or parasites in the wall, may be the responsible predisposing factors. Males past sixty are the more usual victims, and some physical strain the immediate excitant, though the occurrence during sleep has been reported, and an overdose of digitalis once blamed.

Instantaneous death is the most distinctive symptom, but survival for as much as several days has been occasionally reported. A varying sense of anguish and suffocation with collapse is observed in such protracted instances, when the hemorrhage is gradual and the rent small. A rapid, feeble, and disappearing pulse is usual. Gastro-intestinal symptoms may distract attention, as will be seen in my case, where abdominal angina was recognized as the underlying condition.

The recent literature contains the following references to this accident. Parsons, in 1914, describes the case of an old man about sixty, who complained so violently of gastric symptoms that he was about to be explored surgically when sudden death forestalled the operation. On opening the distended pericardium, there was first seen a rupture in the right ventricular wall along the septum; but when this cavity was opened, a second break was found from it into the left ventricle. The presump-

*Read before the Roanoke Academy of Medicine, March 7, 1921.

tion was that the latter lesion was primary and that the great force thus introduced into the right side caused it to burst shortly afterwards. This case had never complained of any heart trouble whatever, though microscopically there was great fatty degeneration of the heart muscles. J. Anderson reports, in 1915, a case in a girl of five, already mentioned, who had congenital syphilis. She was apparently well to the day of her death, which occurred after a vomiting spell. Autopsy disclosed congenital stenosis of the coronary arteries, together with a hematoma of the heart wall, which may have been a dissecting aneurism. The rupture occurred on the anterior aspect of the left ventricle in its upper third and near the interventricular line. There was no fatty degeneration but a chronic atrophy.

In 1918, Dr. T. B. Christian's case was due to an anemic infarct in a syphilitic man of sixty-four years, who had never had a symptom in his life. He worked up to the moment of death, which was due to lifting a heavy load. The lesion was found in the left ventricle, near the septum, and the microscopic examination showed it to be an area of necrotic tissue consequent upon arterio-sclerosis.

In 1919, a Vancouver preacher, fifty-eight years old, of excellent history, habits, and appearance, was a victim, according to Dr. Murphy. The premonitory symptoms were gastric with some backache. Blood pressure was 140 m.m. systolic. After two days' rest in bed, he sat up to read, when he suddenly grasped at his precordia and expired. Autopsy revealed the heart only very slightly enlarged and that confined to the left ventricle, but with a tear one and a half inches long on the anterior surface near the septum. There was only very slight fatty degeneration, and even that was not specially marked near the seat of rupture.

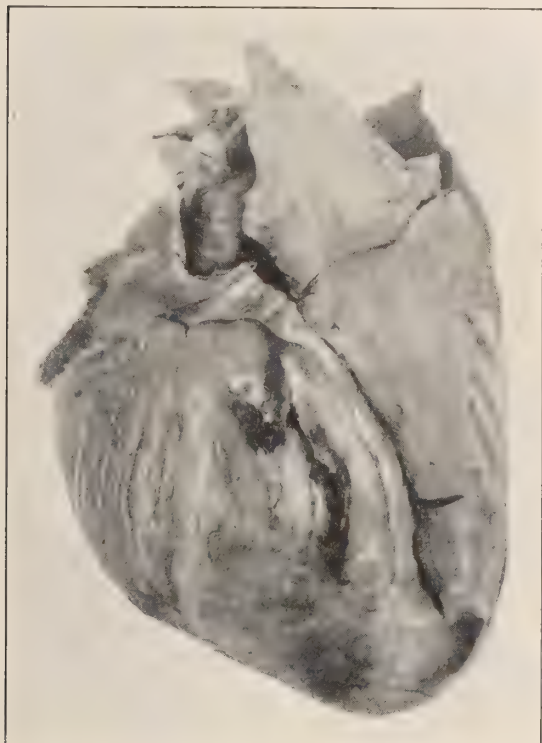
My case, in 1920, was that of a man sixty-one years old, who had been parted from his consort by judicial decree four years before, after a prolific marriage of thirty years' duration. There was some vague history of tuberculosis and rheumatism in his family, though his main complain was indigestion, epigastric pain, and vomiting, at varying intervals for the past four years. He had been a moderate drinker, as well as an irregular and imprudent eater. An unusually violent attack

was the occasion of his presenting himself at the University of Virginia Hospital on November 19, 1920. He then described his sensations as follows: Pain began in his epigastrium, and two days before admission, some discomfort was felt over his heart. This became much worse, and radiated to the left shoulder and down the left arm. This pain became agonizing and he began to vomit. The vomitus contained only food particles. Emesis recurred several times before he reached the hospital, after which he retained nothing, and his violent efforts only produced blood stained mucus.

While well nourished and developed, with moist and warm skin, he appeared to be in great pain. His physical examination was largely negative, except for his heart. His abdomen was universally hypersensitive, but no explanation was found for this tenderness. His reflexes were normal. A few palpable lymphnodes were perceptible in the left cervical region. His urine contained a trace of albumen and a few hyaline and granular casts. His blood pressure was 150 m.m. systolic, and 95 m.m. diastolic. He had five million and forty thousand red cells and thirteen thousand two hundred white cells, with a slight preponderance. (72%) of pmns in his blood. His blood color was 92%. Wassermann was negative.

The cardiac impulse could neither be seen nor felt, either sitting or recumbent. The heart on percussion was not enlarged. Its apex beat was best heard in the 5th interspace, about three and three-quarter inches from the midsternal line. The tones were irregular, but no murmurs were audible, though there was an extra systole about every fourth or fifth beat. The rate was 108 per minute, the temperature 96 degrees Fahrenheit. The patient was very neurotic, moaned and lamented all the time, begging for a little sleep, which a sterile water hyperdermic finally gave him. He expressed a fear of cancer of the stomach and wanted to know the worst. The next day his temperature began to rise and his heart lost its extra systole. His painful attacks of nausea still continued, though with less violence, and he professed to feel better. On the day following this, up to his death, which occurred at noon, November 21st, his fever continued to rise until it reached 101, though his pulse fell to 96, and the cardiac irregularity

recurred. A few fine rales and some dullness at the bases of both lungs posteriorly were detected this last morning, when his leucocytes rose to 15,000. His anginal seizures continued until about noon, when the nurse, noting dyspnea and cyanosis, summoned the physician, but the end had come before the latter arrived, three minutes later.



The autopsy was performed six hours afterwards. The salient and virtually exclusive features concerned the pericardium and heart, except a slight congestion of the bases of both lungs, which might have been a beginning pneumonia, and invoked to account for the fever and increasing leucocytosis in the last hours. On opening the chest, the pericardium was markedly distended, and reached somewhat to the right of the sternum. When it was incised, a pint or more of dark unclotted blood was released. There were no signs of inflammation but a slit like perforation of the left ventricle was evident, as shown in the accompanying picture and specimen, on the posterior side. The heart was of moderate size, certainly not more than a trifle enlarged, and rather uniformly so. The sinuses of Valsalva showed no marked alteration. There was no definite narrowing of the arch of the aorta

and but moderate arterio-sclerosis of it. The origin of the two coronary arteries was normal, and the left one not specially diseased anywhere, though the right showed both arterio-sclerosis and a thrombus in the branch along the posterior side of the heart. On opening the cavities, the mitral valve was obviously too widely dilated, but no changes, either vegetative or sclerotic, were found anywhere. On the posterior aspect of the heart, a longitudinal rupture from one-half to three-fourths of an inch long was found in the left ventricle very close to the septum and about the middle third of the posterior aspect. Examination from the inside revealed in the corresponding place a defect in the endocardium, which was probably one inch by half an inch in dimensions. Under this there was an opening in the myocardium through which the dull end of the dissecting forceps passed quite readily, though the orifice became distinctly smaller as the epicardium was approached. There were no blood clots or thrombi connected with it, and it had evidently not originated beneath a mural thrombus. The wall looked healthy and did not feel particularly soft to the finger or forceps. This was the only area of the kind, and there were no evidences of gumma, tubercle, or tumor formation anywhere.



Section shows on the intima a thrombus attached to the endocardium. The endocardium and edge of the heart muscle exhibited a condition of coagulation necrosis in which and around which were many polymorphonuclears and a moderate amount of edema. Toward the external (epicardial) aspect, some heart muscle cells were found swollen and granular, but which were evidently outside of the area of coagulation necrosis. No blood vessel was found in the section. No other findings were made which would indicate any other reason for the coagulation necrosis except infarct of the muscle.

PATHOLOGICAL DIAGNOSIS.—Infarct of heart muscle with inflammatory reaction.

The striking features of this case are the advanced age, male sex, moderate blood pressure and digestive symptoms with scarcely any cardiac difficulty, and no apparently adequate exciting cause for the fatality. Several of the reported cases presented some of these features. In all but one the lesion was in the left ventricle, near the septum, and in its upper part.

The futility of treatment is obvious, but we should keep a sharp lookout in all so-called digestive disorders in elderly people, as many never complain of cardiac symptoms, and the first intimation is the final summons.

THE PRESENT STATUS OF INTRAVENOUS THERAPY.*

By ALEX. F. ROBERTSON, JR., M. D., Staunton, Va.

In recent years, intravenous therapy has come rapidly to the front in the treatment of various diseases, until, at the present time, it has a well recognized position of importance. As recently as 1914, it was advocated only under extraordinary circumstances and with only a few drugs. Objections offered by Hare and other therapists, at that time, were several. One was the difficulty of finding collapsed or small veins. Another was the inability to puncture a vein without injuring the opposite wall. Warnings were also advanced against the possible sequelae: phlebitis, thrombosis, and embolism.

At the present time, if convinced of the efficacy of the medicament, there is no contraindication to its intravenous use. If we do not confine ourselves to the antecubital

space at the bend of the elbow in our choice of veins, and render the veins prominent by the use of a tourniquet, we are practically never forced to abandon intravenous medication on account of collapsed or small veins—even in the very young or the obese. With a little experience, wounding of the posterior venous wall is avoided, and with proper aseptic technique, thrombosis and embolism are practically never encountered. The phlebitis which occasionally develops, especially after intensive arsphenamine treatment, is benign and, at most, only necessitates the use of another vein in the future.

The physiologic action of most drugs is dependent upon specific effects (bactericidal or antibody formation), or stimulation of vital centers or organs, and it is by the dissemination of the drug in the blood stream that these effects are produced. Advantages of the intravenous method are that effects are obtained quicker, that the agents, when placed directly in the blood stream, are not altered by the digestive fluids in the stomach or intestinal tract, a more accurate dosage is obtained, and control over the patient is assured.

However, this method is not advocated to the exclusion of well-established and thoroughly efficient methods, but only in those conditions in which careful observation has shown its superiority over older methods of administration.

SYPHILIS AND OTHER SPIROCHAETAL DISEASES.—The discovery in 1905 of the spirochaeta pallida as the cause of syphilis, followed by the discovery of the value of salvarsan as a spirochaetocide, marked the true beginning of intravenous therapy. Used first intramuscularly, salvarsan was soon given intravenously, and such good therapeutic results followed—to say nothing of the substitution of an almost painless method—that this route was soon adopted universally. The treatment of thousands of cases of syphilis with arsphenamine has demonstrated the safety and value of intravenous therapy and has paved the way for the treatment of other conditions by this route. The treatment of syphilis with arsphenamine is too well known to merit description, but it might not be amiss to state that, while this is our most powerful weapon against syphilis, it

*Read before the semi-annual meeting of the Valley Medical Association at Staunton, May 26, 1924.

should always be followed by thorough mercurialization.

Arsphenamine is also useful in spirochaetal diseases of non-syphilitic origin.¹ In Vincent's angina, when there are serious complications, very extensive lesions, or where the ulceration is not controlled by local applications, arsphenamine should be given intravenously, as it is a specific for this disease. This drug also acts as a specific in relapsing fever, yaws, gangosa, and pulmonary spirochaetosis.

A therapeutic effect is noted in rat-bite disease and in certain dental conditions. No benefit has been found in other spirochaetal diseases as Weil's disease and yellow fever.

ANEMIA.—Transfusion of blood may often be a matter of life and death, either after a sudden loss of blood from hemorrhage, or a gradual loss from such a condition as pernicious anemia. The introduction of the citrate method, by means of which the blood may be collected and transported from donor to recipient, and then be introduced intravenously (by gravity or syringe), has enormously simplified this procedure and made it available for the general practitioner. Also, the discovery of blood types and the consequent preliminary matching of the bloods of donor and recipient, together with the Wassermann test on the donor, have eliminated accidents and sequelae, so that the operation is now perfectly safe and available to all.

SHOCK.—Of common use and of incontestable worth is the intravenous injection of normal saline, especially if combined with adrenalin, in the treatment of shock. In patients in a critical condition, this treatment is often instituted during an operation with immediate change for the better in color, respiration and pulse quality.

ACIDOSIS.—Acidosis is a disturbance of metabolism in which there is a decreased capacity of the tissues to get rid of carbon dioxide and other acids. The most familiar example of acidosis is that associated with diabetic coma. Acidosis also occurs in many other conditions. It may be the terminal phase of an acute disease or an independent affection. As an example of the latter is the acidosis associated with recurrent vomiting or diarrhea, so often seen in infants. In the acidosis of infants, excellent results have been obtained by Howland and Marriott² at Johns Hopkins, as well as

by other investigators, by the intravenous injection of sodium bicarbonate. In severe cases, where oral administration is impossible, this is the treatment of choice. The acidosis of diabetes is controlled by diet, alkalies not being recommended by Joslin and others.

MALARIA.—The intravenous injection of quinine is indicated in the treatment of fulminant, or pernicious, malaria and the present status of opinion seems to be that it should be reserved for those cases or for patients who cannot take quinine by mouth. Hypodermic and intramuscular injections have been abandoned because it has been shown that a coagulum forms and the greater part of the dose is lost. Also, abscesses and permanent indurations often follow. When given intravenously, quinine should be well diluted with normal saline.³

If some new quinine derivative is prepared capable of destroying all the parasites in a few injections, this method will undoubtedly take precedence over the oral administration of quinine.

GLUCOSE IN PNEUMONIA.—During the epidemic of pneumonia following influenza in 1918-19, intravenous injections of glucose were given an extensive trial at the hospitals at various army camps, with very favorable impressions as to its efficacy. While used chiefly as an adjunct measure in the treatment of pneumonia, it is also useful in any febrile condition associated with toxemia or marked dehydration. John⁴ concludes from available data and experiments made, that:

1. The administration is without danger.
2. That the patient is made comfortable and sleep is induced.
3. That diaphoresis, with lowering of temperature, is brought about and elimination of skin and kidneys is increased.
4. That a considerable amount of fluid is provided for the circulation, in addition to 100-300 calories of readily available food, thereby slowing the heart rate and providing nutrition.

5. That practically all of the medication can be given in the glucose, including anti-pneumococcic serum in Type I cases.

The dosage of glucose advocated is 250 cc. of a 10% solution, given night and morning or only at night. The commercial product is pre-

ferred by Mosenthal and others, and the solution should be injected very slowly.

GRANULOMA INGUINALIS.—Granuloma Inguinalis, known also as groin ulceration, is endemic among negroes in this country. The Wassermann reaction is negative, and the caus eis as yet unknown, but it is the opinion of Campbell⁵ that the intravenous injection of tartar emetic is a specific. It is used routinely at Bellevue Hospital and other places, and should certainly be given a trial should a case of this disease be discovered. Cases are reported cured or improved by this treatment, which had had intensive arsphenamine and mercury treatment, on the assumption that they were syphilitic, although the Wassermann was negative.

THROMBO-ANGIITIS OBLITERANS.—Thrombo-angiitis obliterans is an inflammatory disease of the blood vessels of unknown origin. In 1915 Mayesima showed that there was a constant high viscosity of the blood in all types of gangrene. In attempts to reduce the viscosity of the blood Meyer⁶ was the first to use sodium citrate intravenously. Steel⁷ reports very favorable results with the citrate method in the treatment of thrombo-angiitis obliterans, over a period of three years, giving 250 cc. of a 2% solution every second day the first month, and gradually lengthening the intervals. He reports relief of pain and checking of the process in a disease which would otherwise prove fatal.

NAUSEA OF PREGNANCY.—An interesting article has recently appeared by Hirst,⁸ advocating the intravenous administration of corpus luteum in nausea of pregnancy. He gives 2 cc. doses every other day, or twice daily in pernicious cases, for at least six injections, and reports gratifying results over a two year period. This treatment is at least worthy of trial before it is added to the legion of unsuccessful remedies for the nausea of pregnancy.

SERUM THERAPY.—The discovery and use of the various antisera has been a great stimulus to intravenous medication and, while results with some of the antisera have been disappointing, yet with others they have been most successful. With the exception of antimeningococcus serum, which is given intraspinally, these antisera are almost universally introduced by the intravenous route.

BACILLARY DYSENTERY.—The serum treatment of bacillary dysentery seems to be well established and, if applied early, produces striking results.⁹ The antiserum is, as a rule, injected subcutaneously, but may be injected intravenously in severe cases in doses from 50 to 100 cc. Effects consist in improvement of the nervous symptoms and lessening of shock in a few hours, and disappearance of the tenesmus and colic within twenty-four hours. Chronic cases, as a rule, do not respond to serum treatment.

DIPHTHERIA.—Logically, it would seem advantageous to give diphtheria antitoxin intravenously, as it is necessary for antitoxin to enter the blood stream before it passes to the tissues in contact with the toxin. Given intramuscularly or subcutaneously, the highest antitoxin value of the blood is found twenty-four to forty-eight hours after the injection.¹⁰ When given intravenously, the highest antitoxin value is at the moment of injection—but twenty-four hours later is twice as high as by the intramuscular route. In either event, the antitoxin persists in the blood for several days, and a single dose, if large enough, is sufficient in any case. However, the intravenous use of antitoxin is not generally advocated, but is reserved for very severe cases.

LOBAR PNEUMONIA.—Although specific antisera have been developed for Types I, II and III, pneumococci, only the antiserum for Type I is therapeutically efficient. This has come into general use and should be given as soon as the type is determined. By this treatment, at the Rockefeller Institute,¹¹ the mortality of this variety was reduced from 25-30% to 7.5%. Ninety to one hundred cc. of the serum should be injected intravenously, and repeated every eight hours until the temperature falls.

ACUTE POLIOMYELITIS.—Amos and Chesney,¹² have obtained promising results by the serum treatment of infantile paralysis. The serum is administered both intraspinally and intravenously. Good results have been obtained only by the use of convalescent serum from human cases which have recovered from the disease, and this serum must be given early during the febrile stage.

STREPTOCOCCUS INFECTIONS.—Antistreptococcus serum has not proved of great value and its routine use in the treatment of streptococcal infections is not advocated.¹³

TETANUS.—In the curative treatment of Tetanus our chief reliance is properly placed on the intraspinal administration of tetanus antitoxin, but it is advisable to give an intravenous dose of 5,000 or 10,000 units immediately to neutralize any toxin present in the blood, and this is a generally accepted procedure. Intravenous treatment alone, however, has proved very disappointing.

NON-SPECIFIC PROTEIN THERAPY.—Very recently the intravenous injection of non-specific proteins—albuminose solutions, horse serum, or bacterial proteins—has come into use. While the mechanism of this therapy is imperfectly understood and it is still in the experimental stage, yet remarkable improvement has followed in some of the arthritides,¹⁴ with some apparent cures, and favorable results have been obtained in some cases of gonorrheal arthritis and epididymitis.¹⁵

CONCLUSIONS.

1. Intravenous therapy is well established and is an invaluable therapeutic measure.

2. The procedure is practically without danger and does not require especial training or skill for its use.

3. It is the recognized method of choice for the administration of arsphenamine, transfusion of blood, infusion of saline and adrenalin, and for most of the serums in serum therapy. It is a valuable method for the introduction of alkalies in severe acidosis, and for quinine in pernicious malaria.

4. If further observations bear out present indications of therapeutic success, it will become the recognized method for the administration of glucose in pneumonia, of tartar emetic in granuloma inguinalis, of sodium citrate in thrombo-angiitis obliterans, and possibly of corpus luteum in the nausea of pregnancy.

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MEASURING INTELLIGENCE.*

By E. P. TOMPKINS, M. D., Roanoke, Va.

It has occurred to me that this Academy, having heard many able and interesting papers on strictly medical, that is to say, *therapeutic* subjects, during the session now drawing to a close, might be willing to consider, for a few minutes, another matter which, while strictly scientific, is more in the diagnostic than in the therapeutic line. And so I invite your attention to the efforts that are being made to perfect a system of getting at the intelligence of any given individual, or group of individuals. It is a subject about which probably as yet only a comparatively few doctors of medicine have learned much, but Mr. Edison's recent use of this method of testing out his would-be employees, and the resultant newspaper publicity, have brought the subject into the public eye.

In the first place, what is intelligence? It is not such an easy thing to define. Many definitions have been offered. From the psychological standpoint it is the power of creative elaboration of new products from material given by memory and the senses. From the practical point of view, it involves the ability to surmount difficulties, to avoid errors, and to adjust one's self to environment. Stern defines intelligence as "the capacity of an individual to adjust his thinking to new requirements; it is general adaptability to new problems and conditions of life." Many other definitions might be quoted.

While we may not be able to *exactly* define intelligence, yet everyone knows what the word stands for, at least in a general way. Now, to measure such an elusive thing is not an easy task. Psychologists had experimented with intelligence tests for twenty years at

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least, before a Frenchman, Alfred Binet, brought out a method, known as the Binet-Simon scale, Doctor Simon a medical man being associated with him in his research work. Binet died in 1911, before he had completed his method. His work has been taken up by others, and brought reasonably near to completion, that is to say, we have now in what is known as the Stanford Revision of the Binet-Simon Scale, a reasonably accurate test of intelligence, having been tried out on 2,300 children and grown-ups. This is largely the work of Professor Lewis M. Terman, Professor of Education in Stanford University, California, assisted by a corps of fellow-workers. Much of the contents of this paper is from his writings, as well as from those of H. H. Goddard, director of the Vineland Laboratories where, as you know, is a large institution for studying feeble-minded children; also from the writings of J. E. Wallace Wallin, director of the Psycho-Educational Clinic of St. Louis. It may be said at the outset that criticisms of the Binet method have been frequently voiced, but chiefly by persons who have had little or no experience with the method.

Psychology is the science of mind, and mind determines human conduct. Psychology should enable us to control our conduct both through an understanding of ourselves, and an understanding of the motives and actions of others. For a generation we had thought the Germans were the greatest living psychologists. Yet no small cause of their downfall was due to their inability to comprehend the minds of their adversaries.

Human psychology may be divided into child psychology and adult psychology, and again into normal and abnormal. Obviously, these overlap, so that we have normal and abnormal child psychology and normal and abnormal adult psychology. The biologist does not seize upon the first plant or animal that comes to hand, and attempt to solve his problem. Instead he seeks a plant or animal of the simplest structure that can furnish the data needed. He proceeds from the simplest to the complex. The study of the child mind is a great step forward because the child mind is simpler than the adult. But child study has two limitations: first, because children are

both normal and abnormal. This was not recognized at first. At least two per cent. of any large number of children are to some degree feeble-minded. Second, because the normal child develops so rapidly. In the feeble-minded we have a group who are not developing, and so are more easily studied. A child arrested in his mental development at eight years has eight year mentality the rest of his life. We can, therefore, devote as much time as we wish to thus studying the eight year level. The advantages of this are many. If a passing train is going sixty miles an hour we can see few of its details, if it is going only five miles, we can see more, while if it is stopped and sidetracked, we do not need to limit time and method. The feeble-minded are stopped and there are almost no limitations to opportunity for study.

There are four fundamental questions relating to subnormal individuals which invite scientific investigation:

First, The development of an adequate art of differential diagnosis of the different degrees and types.

Second, The matter of providing appropriate educational treatment.

Third, The question of after-care, after-guidance, and control.

Fourth, The development, if possible, of preventive measures, eugenic or otherwise, to reduce or to eliminate the army of subnormal incompetents.

The basis of all is diagnosis. An accurate estimate of the level of intelligence in school children, and of child and adult offenders in the courts, is of practical importance, not to the individual only, but to the state, the nation and the family. The diagnosis is easy, in the well-marked class, but no one except an expert, and not always he, can determine borderline and backward cases, and the number of these is legion, both as to children and adults.

This diagnosis cannot be made by one having only a superficial knowledge of the subject, those known simply as Binet testers; it has been said these bear the same relation to the thoroughly trained psychologist that trained nurses bear to doctors of medicine.

There are two methods of study by which it is hoped to make eugenic diagnoses: heredi-

tary study of ancestral strains, and psychological testing the level of intelligence and of mental deviation. Present day hereditary studies are usually conducted with either a Galtonian, or a Mendelian bias.

Galton's law is briefly this: One-half of the individual's heritage comes from the two parents (that is one-fourth from each parent), the other half being made up thus, one-sixteenth from each of the four grandparents, one-eighth from the eight great grandparents, that is one-sixty-fourth from each, and so on back through the ancestral lines. This is believed to express with fair accuracy the contribution made by the several ancestral lines.

Mendel's so-called law is not quite so easily stated. He found out certain facts in the propagation of peas, peas being normally self-fertilizing, that is not cross-fertilized by insects, thus when a strain of tall peas (about six feet in height) was artificially crossed with a strain of dwarf peas (about one and a half feet tall), all the hybrid peas of the first generation (called F-1) were invariably tall. Tallness was found to be *dominant* and dwarfness *recessive*, which is used to mean that when a character from one parent appears in the offspring to the exclusion of the contrasted character from the other parent, it is dominant, while a character from one parent, which remains undeveloped in his progeny when associated with the corresponding dominant from the other parent, is recessive. When these tall hybrid peas of the first generation were mated, the offspring (F-2) were either tall or short, but never intermediate. There was always approximately three times as many tall as of short peas, the typical Mendelian ratio when one pair of characters is involved. Finally, when the seeds from the second hybrid generation were separately harvested and sown, it was found that dwarf recessives bred true, producing nothing but dwarfs, but the tall peas like the original tall hybrids, produced tall and dwarf peas in the ratio of 3 to 1. The same principle obtained in all other experiments, where the inheritance of an alternate pair of characters was concerned. Successive crossings yielded only three kinds of individuals: dominants which bred true, dominants which bred both dominants and recessives, and recessives which always bred true.

The Mendelian theory has been applied to the explanation of the inheritance of a large number of characteristics in plants and animals, and to a large number of mental and physical traits in man, including such complex conditions as feeble-mindedness, epilepsy, insanity, etc. Some Mendelians have asserted that, given certain conditions of ancestral strains, it is possible to forecast with almost mathematical precision the relative incidence in future generations of normality and abnormality, feeble-mindedness, epilepsy and insanity. We are told that feeble-mindedness is a unit trait, that it behaves like a recessive following the Mendelian ratio, that when two feeble-minded are mated all the children will be feeble-minded, that when a feeble-minded and a perfectly normal person are mated, the children will be normal but carriers of feeble-mindedness, that when two carriers marry twenty-five per cent. of the offspring will be defective, while fifty per cent. will continue to be carriers. These views it may be said, however, have been vigorously combated.

Now as to the method originated by Binet. "The Binet scale is made up of an extended series of tests in the nature of 'stunts', or problems, success in which demands the exercise of intelligence. As left by Binet the scale consists of 54 tests, so graded in difficulty that the easiest lie well within the range of normal three year old children, while the hardest tax the intelligence of the average adult. The problems are designed to test native intelligence, not school knowledge or home training. They try to answer the question, 'How intelligent is this child or this adult?' How much he has learned is of significance only in so far as it throws light on his ability to learn more."

The tests were arranged in order of difficulty, as found by trying them upon some two hundred normal children of different ages from three to fifteen years. It was found, for illustration, that a certain test was passed by only a very small proportion of the younger children, say the five year olds, and that the number passing this test increased rapidly in the succeeding years until by the age of 7 or 8 years, let us say, practically all the children were successful. If the test was passed by about two-thirds to three-fourths of the normal children aged 7 years, it was considered

by Binet a test of 7 year old intelligence, and so on. By trying out many different tests in this way it was possible to secure five tests to represent each age from 3 to 10 years, (except age 4, for which there are only four tests), five for age 12, five for age 15, and five for adults, making 54 in all.

In using the tests, let us suppose a child being tested is 9 years of age. If he goes as far in the tests as normal 9 year old children go, we say his "mental age" is nine years. If he goes only as far as normal 7 year olds go, we say his "mental age" is seven years, etc. A child mentally defective may have a "mental age" of only 4 years, even though his actual age may be 8 or 10 years, while a young genius of nine may have a mental age of 12 or 13. The grading is more definite by this method than by any hitherto proposed. Descriptive terms like, "bright", "moderately bright", "dull", "very dull", etc., have no universally accepted meaning. One person may say of a child or adult, "He is very bright", while another one may grade him as only "moderately bright". But every one knows what is meant by 8 year mentality, 4 year mentality, etc.

Why should a device so simple have waited so long for a discoverer? We do not know. It is of a class with many other unaccountable mysteries in the development of scientific matters. Apparently the idea of an age-grade method, as this is called, did not come to Binet himself until he had experimented with intelligence tests some fifteen years. The discovery ranks, perhaps, from the practical point of view, as the most important in all the history of psychology.

"What is the use of this?", is a question which naturally would be asked. In reply it may be said that many uses have been found, and many others will yet develop. Mr. Edison says of the men who apply to him for jobs requiring intelligence, "I cannot tell by looking at a man what he knows, and I want some method by which I can form an estimate of his value in my workshop," and he says further "Billions of dollars are wasted in putting men into places they cannot fill." So the vocational field is a fruitful one for this system. The time is probably not far distant when intelligence tests will become a recognized and widely used instrument, an "instru-

ment of precision", if you please, for determining vocational fitness. Any business employing as many as five hundred or a thousand workers, as for instance a department store, could save in this way several times the salary of a well-trained psychologist.

Again, the most important question of heredity is that regarding the inheritance of intelligence. This problem cannot be attacked without some accurate means of identifying the thing which is the object of study. Without the use of scales to measure intelligence we can give no better answer as to the essential difference between a genius and a fool than is found in legend and fiction.

Thus far intelligence tests have found their chief application in the identification and grading of the feeble-minded. Intelligence tests are rapidly extending our conception of feeble-mindedness to include milder degrees of defect than have generally been associated with this term. One of the important facts brought to light by the use of these tests is the frequent association of delinquency and mental deficiency. Although long recognized that the proportion of feeble-mindedness among offenders is rather large, the real amount has until recently been underestimated by even the most competent students of criminology. Criminologists have in the past been accustomed to give more attention to the physical than to the mental correlates of crime. Thus, Lombroso and, I believe, Max Naudeau subjected thousands of criminals to observation and measurement with regard to such physical traits as size and shape of the skull, anomalies of the ear, nose, eye, teeth, hands, feet, fingers, etc. Although such studies performed an important service in creating a scientific interest in criminology, the theories of Lombroso have been wholly discredited by the results of intelligence tests. They demonstrate beyond any possibility of doubt, that the most important trait of at least twenty-five per cent. of our criminals is mental weakness.

Heredity studies of "degenerate" families have confirmed in a striking way the testimony secured by intelligence tests. Among the best known of such families are the "Kallikaks", the "Jukes", the "Hill Folk", the "Nams", the "Zeros", and the "Ishmalites". As to the Kallikaks, Martin was a youthful

soldier in the Revolutionary War. He met a feeble-minded girl at a tavern frequented by the militia, and by her he became the father of a feeble-minded son. In 1912 there were 480 known descendants of this temporary union. It is known that 36 of these were illegitimates, that 33 were sexually immoral, that 24 were confirmed alcoholics, and that 8 kept houses of ill-fame. The explanation of so much immorality will be obvious when it is stated that of the 480 descendants, 143 were known to be feeble-minded, and many of the others of questionable mentality. A few years after returning from the war, this same Martin Kallikak married a respectable girl of good family. From this union 496 individuals have been traced in direct descent, and, in this branch of the family, there were no illegitimate children, no immoral women, and only one man who was sexually loose. There were no criminals, no keepers of houses of ill-fame, and only two confirmed alcoholics. This branch of the family did not contain a single feeble-minded individual, but was made up of doctors, lawyers, judges, educators, traders, and landholders.

Most physicians are familiar with the notorious Jukes family, 130 of whom have been convicted of crime, and who it is said have in the last seventy-five years cost the state of New York the sum of one million, three hundred thousand dollars, besides the diseases and other evil influences they have helped to spread. Max Jukes was born in 1720, and up to within a few years, twelve hundred of his descendants have been identified. Of these 300 were in the poor house, 300 died in childhood, 440 were viciously diseased, 400 physical wrecks, 128 women out of 229 of marriageable age were prostitutes, and 60 were habitual thieves, averaging twelve years each in jail.

Considering the tremendous cost of vice and crime, estimated at five hundred million dollars per year in the United States alone, it is evident that psychological testing has found here one of its richest fields of endeavor. Before offenders can be subjected to rational treatment, a mental diagnosis is necessary, and, while intelligence tests do not constitute a complete psychological diagnosis, they are nevertheless its most indispensable part.

So far as Roanoke is concerned, the only

use that has yet been made of this intelligence testing, if I am correct, is in the public schools. Only a few of the children have so far been tested by this method. It requires about forty minutes to each child, when individuals are tested, but there is a method of group testing which has been used to some extent. During the winter just passed, Dr. Ferguson, of the University of Virginia, gave a series of lectures to certain of the teachers, I understand, and presumably these teachers will be qualified to give intelligence tests to the pupils later. When the Stanford Revision was being worked out, however, six months' instruction was first given to those who were to take part in the tedious detail.

In the Lee Junior High School here, I am told that forty-two per cent. of the children failed to pass on one or more subjects. This means that teachers will have to be employed next year to teach over again what has been already taught, but was not learned. It is probably not far from correct to say that fifteen per cent. of the money spent in the Roanoke schools is spent in this way, that is to say the salaries paid to 45 of the 276 teachers is money spent to *re-teach subjects already gone over*. Of course not all of this is due to mental deficiency of the pupils; much of their failure is due to general "cussedness" in not studying; but, if any of it is due to mental deficiency, the sooner this fact is known, as to any given pupil, and the remedy applied, the greater the saving of taxpayers' funds.

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ETIOLOGY, PATHOLOGY AND DIAGNOSIS OF SURGICAL DISEASES UNDER THE SYMPOSIUM OF "DISEASES OF THE KIDNEYS, URETERS AND BLADDER".*

By LAWRENCE T. PRICE, M. D., Richmond, Va.

Before entering upon the discussion of the etiology, pathology and diagnosis of surgical conditions of the urinary tract, it is best to establish clearly what is included under the term "surgical conditions."

In certain instances of pathological conditions of the urinary passages, it is perfectly obvious that some surgical procedure repre-

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sents the only suitable method of treatment; in other cases, however, it is debatable whether the condition should be classified as surgical or medical. Thus, in renal calculus or neoplasm, there can be no question as to the valuelessness of medical temporizing; in pyelitis, on the other hand, purely medical measures, such as rest in bed, the free administration of fluid, and, possibly, the use of urinary antiseptics may prove efficacious and obviate the necessity of recourse to surgical procedures, such as lavage of the renal pelvis or dilation of the ureters. It is apparent, therefore, that we cannot arbitrarily place certain cases under the heading "surgical" and others under "medical"; some overlapping occurs. In the present discussion, however, I shall consider as "surgical" conditions all those where surgical methods of treatment have been proved of value.

It is obvious that a comprehensive discussion of the etiology and the pathological anatomy of the surgical conditions of the urinary passages would consume much more time than has been assigned to me. Of necessity, therefore, it must suffice to mention only briefly certain salient features bearing on these important points.

The surgical conditions of the bladder are usually secondary to pathological processes elsewhere in the urinary tract. Vesical neoplasms and traumata, on the other hand, may be located primarily in the bladder. In the ureters, the condition generally is transmitted from the kidney above or the bladder below; but it may arise from adjacent abdominal viscera or as the result of trauma. In the kidneys, the condition which demands surgical intervention is generally primary; tuberculosis is always secondary to systemic infection, and renal calculi are due to some perversion of the mineral metabolism, though infection in the renal pelvis is probably always an important determining cause. Pyelitis, considered as a surgical condition, is generally due to infection somewhere else in the body, the organisms being carried in the blood to the pelvis of the kidney. It has been claimed that pyelitis may arise from infection lower in the tract, constituting an ascending infection, but this is improbable.

Even with the utmost refinements of diagnostic skill, it is not always possible to determine definitely the nature of the disease pro-

cess. In most cases, however, the adoption of a routine method of examination of the urinary tract will enable not only the skilled urologist but even the intelligent and painstaking general practitioner to obtain much useful information. In the instances where the simpler diagnostic methods fail to establish the diagnosis satisfactorily, it is necessary to have recourse to the more elaborate methods which are utilized by the specialist. It seems to me that it would be of value to outline briefly the plan of procedure which I have found useful; discussing those methods which do not demand especial skill or apparatus and then taking up the more elaborate procedures.

In the first place, a careful history is of the utmost importance. Inquiry should be made as to the frequency of voiding, day and night: dysuria, pyuria, and hematuria. The history of the occurrence of hematuria should lead to further questioning to ascertain whether the appearance of the blood depends upon exercise; whether it appears at the beginning or the end of urination or whether the blood is evenly mixed with the urine. The occurrence of pyuria should always be specifically inquired into. Naturally, the average patient bases his statements regarding the occurrence of pyuria on the appearance of the urine; a cloudy specimen indicating pus. It is well to recall that this is by no means conclusive; phosphates in even a freshly voided specimen of urine may be so abundant as to impart a true milky opacity. The presence of pain is also of importance. We should ascertain its location, direction of radiation, degree, and character. It should be borne in mind that the pain is often referred, that due to vesical calculus, for instance, being localized in the penis. Another important point regarding pain in the urinary passages, first pointed out by Chute and recently emphasized by Vanderhoof, is that the cause may lie outside the urinary tract, disease of the spinal vertebrae sometimes causing pain very similar to that of renal calculus. The patient should be questioned as to the occurrence of acute febrile attacks; "chills and fever," loss of weight, night sweats, and, of the utmost importance, venereal infection in the past should be carefully considered. It is a well recognized fact, however, that this part of the history is often of very little value because of lack of frankness

on the part of the patient. In the female patients we should ascertain if there has been recent pregnancy and, if so, whether untoward symptoms occurred during it.

In dealing with a male patient, the first step in the examination is to make use of the three glass test. In order to do this, have the patient void into three conical sedimentation glasses; the first portion of the urine in the first glass, the intermediate portion into the second glass, and the last of the urine in the third glass. The appearance of pus or blood in the first glass, the urine in the other glasses being clear, indicates that the pathological process is in the urethra; if the first and second glasses contain clear urine, while the third shows pus or blood, the conclusion to be drawn is that the bladder is involved; if the urine in the first and third glasses contains pus and blood, while that in the second glass is clear, the indication is that the vesicles and prostate are involved. If, in this last case, the bladder and urethra be irrigated and the bladder be left filled with the irrigating fluid, upon voiding this fluid in the three glasses, it will be found that the abnormal elements appear only in the third glass, this confirming the diagnosis of disease of the vesicles and the prostate. If all three glasses show blood or pus evenly alike, the pathology is of kidney origin.

Following the three glass test, a careful palpation of the scrotal contents is made. Attention should be directed to the condition of the testicles, together with the globus major and minor; the presence or absence of varicosities in the veins; and the condition of the vas.

Next, by means of a rectal examination, the attempt is made to gain additional information in regard to the prostate and vesicles. Especial attention should be paid to the size of the gland, its density, and the character of its surface, whether regular or irregular. The palpating finger at the same time enables us to ascertain the condition of the seminal vesicles; whether they are dilated, sclerosed or normal.

By means of massage of the prostate, the secretion is obtained and may be examined for the presence of bacteria, infection here being of great importance in determining the occurrence of arthritis, neuritis, or cardio-renal disease. If I may be pardoned the digression, I should like to remark upon the apparent dis-

regard shown by many physicians as to the possibility of systemic poisoning from focal infection in the urinary tract, especially in the prostate and vesicles. In my opinion, this is fully as important a source as the teeth or tonsils.

Having completed these preliminary steps, the urologist, if uncertain as to the diagnosis, then invokes the aid of the roentgenologist. A careful roentgenological examination of the urinary tract is of the utmost value, and should always be made when there is a history of pain suggesting the presence of calculus. By means of the X-ray, the location, size, and number of the stones may be determined.

By means of the endoscope, the interior of the urethra may be examined. Infrequently, pathological processes are located here; as illustrative, I may mention a case seen recently, where there was persistent and rather profuse hematuria. On employing the three glass test, all of the blood was present in the first glass; endoscopic examination revealed the presence of a polyp in the membranous urethra.

The cystoscope enables us to inspect the interior of the bladder and to determine the existence of pathological conditions here. Thus, vesical calculus or neoplasm, tuberculosis, diverticulae, trabeculation, cystitis, or trigonitis is revealed if present. Furthermore, the appearance of the urethral crifices may furnish information regarding a diseased condition elsewhere. Thus, tuberculosis of the kidney leads to the development of a characteristic ulceration around the ureteral orifice. Stone of the kidney or ureter, or, indeed, any condition which gives rise to pus formation, produces inflammation of the orifice of the ureter and the occurrence of the "fish mouth meatus," of diagnostic importance. The attempt to introduce a ureteral catheter into the ureter may reveal the presence of stricture; or the passage of the catheter may be prevented by ureteral kinks, angulations or calculi. Ureteral catheterization also enables us to determine the organ involved in unilateral renal diseases, the blood, pus, or bacteria, appearing in the urine obtained from the diseased kidney. Tubercle bacilli may be demonstrated in the urine, but this often fails and it is then necessary to resort to guinea-pig inoculation.

While the catheters are within the ureters, phthalein may be injected intravenously and

the time of its appearance in the separate urines noted, this giving us information as to the functional capacity of the two kidneys. At this time, the pelvis of the kidney may be injected with some opaque medium, as sodium bromide solution, and the condition of the renal pelvis ascertained by X-ray examination.

Abdominal palpation may disclose the presence of certain gross lesions of the urinary organs, such as tumor of the kidney, pyonephrosis, or hydronephrosis, and occasionally, pyelitis. Information as to the condition of the ureters and of the bladder may rarely be obtained by abdominal palpation. Indeed, this procedure is of very little value in telling us any more than we have learned by the other methods which have previously been mentioned.

While probably of more importance from the standpoint of medical condition, the examination of the blood is often useful to the surgeon also. Thus, the total non-protein nitrogen and the urea may indicate the functional capacity of the kidneys; and, as has been recently emphasized by Bigelow, creatinin determination has great value as regards prognosis, a retention of more than 2.5 mgm. per 100 c.c. of blood, indicating that recovery will not occur.

To demonstrate the practical application of some of the above cited points of information, I am reporting one case which reveals the facts desired and establishes a diagnosis of a condition other than that which appeared to be present by the superficial history of the case and the symptoms elicited, and which would naturally have been taken to be that of a case of cystitis pure and simple:

CASE No. 3279. Mr. A. B. R., age 24, referred for diagnosis and treatment, diagnosis by referring doctor being cystitis. Patient had usual diseases of childhood, otherwise has been healthy throughout life, of average size and physique. Patient stated that while in the army in October, 1917, had influenza. Five weeks ago was taken ill with an acute pain in the region of the bladder, with frequency of urination. Examination of the patient was as follows:

Penis, scrotal contents, prostate and seminal vesicles normal. Bladder capacity 4 ozs. Urine foul and with much difficulty the bladder was cleansed. Bladder negative for stone, ulcer

and tumor. The mucous membrane of the entire bladder is densely congested. Both ureter openings standing open, resembling the appearance of small diverticulae. Catheters readily introduced to the pelvis of both kidneys and specimens obtained.

LABORATORY: 1 c.c. phthalein administered intravenously. Appearance left side 7 minutes; 30 minutes secretion 21%. Appearance right side 14 minutes; 30 minutes secretion scant trace.

Twenty c.c. 20% solution sodium bromide injected into the pelvis of the right kidney and submitted for X-ray.

X-ray report shows both kidneys and ureters negative for stone. Left kidney normal in size and position. Right kidney apparently small in size, but the pelvis of the kidney is markedly dilated and shows evidences of destruction of the calices. The right ureter is considerably dilated.

Analysis of urine from right side shows practically nothing but pus cells and the gross appearance is that of pus; negative for tubercle bacilli; great quantity of staphylococci present. Culture gives abundant growth of staphylococcus.

Left ureter specimen shows an occasional pus cell. Culture gives a moderate growth of staphylococcus.

Wassermann negative.

Blood urea 65 milligrams per 100 c.c.

CONCLUSIONS: Taking into consideration the above findings, it appears that the right kidney is materially diseased, the nature of which is a pyonephrosis, and that the left kidney is doing the work of both kidneys, though it has some infection. The cystitis of the bladder is accompanying the condition of the right kidney and is secondary thereto.

RECOMMENDATIONS: That a right nephrectomy be done and that autogenous vaccine and a urinary antiseptic be administered by way of treatment for the left kidney.

UROLOGICAL DIAGNOSIS. Pyonephrosis of the right kidney.

This kidney was removed and the above findings corroborated. The kidney was atrophied to about one-fifth size, with very little functional tissue left. The pelvis of the ureter contained about two ounces of pus and urine and a very definite stricture existed at the ureteropelvic junction.

In conclusion, the etiology depends upon the following facts:

First. (a) Bladder conditions are universally secondary to kidney conditions except in neoplasms.

(b) Ureter conditions are secondary to conditions either in the bladder or kidneys.

(c) Diseases of the kidney are primary with the exception of tuberculosis and diathesis for stone formation.

Second. The pathology of bladder and ureter conditions is that of the pathology of like conditions elsewhere in the body, having like conditions and degree.

Third. The diagnosis is revealed by approaching the case by the simple methods first, a clear understanding of the history symptoms, and the observation of the urine voided in three glasses, which fixes the location of the disease. The conclusive diagnosis is established by the use of the cystoscope and accessory laboratory and X-ray examinations.

505 Professional Building.

REPORT OF A CASE OF CHRONIC NEPHROSIS AS CLASSIFIED BY EPSTEIN.*

By CHAS. E. CONRAD, M. D., Harrisonburg, Va.

To begin with, I will give a summary of an article by Dr. Albert A. Epstein of New York, as reported in *The Medical Clinics of North America*, July, 1920.

"Through the lack of a more suitable nomenclature the term 'chronic parenchymatous nephritis' is ordinarily applied to a variety of renal affections. Under this heading we find grouped cases of chronic diffuse nephritis, of amyloid kidney, and cases of so-called chronic nephrosis. Although the types of cases are pathologically different, the similarity of the outstanding symptoms, namely albuminuria, oliguria, and edema, makes them frequently almost indistinguishable. Recent investigations on the chemistry of the blood and on the urine have added much helpful information on the disease in question, but ultimate recognition of the exact nature of the renal disease in a given case often depends upon historic facts, etiology, and a number of associated clinical phenomena.

"Chronic nephrosis is a term not really

suited to the condition which it is intended to define, but for want of a better name will be used here to signify the chronic degenerative tubular nephritis. Chronic nephrosis occurs usually in relatively young persons. It is of obscure or unknown origin, and bears no relation to known infectious diseases. In women, pregnancy may stand in etiologic relationship to the condition. It is characterized by a pronounced albuminuria, with or without casts. The urine is usually free from blood elements. The blood-pressure is not elevated. At first the condition may be devoid of other gross manifestations; but, as it progresses, oliguria and edema invariably develop. Cardio-vascular changes are not present unless brought about by some secondary extrarenal cause. Pallor is usually very pronounced. Subjectively the patient may complain of headaches, dyspnea, and vomiting.

"From the standpoint of etiology, chronic nephrosis is usually of obscure origin, and occasionally pregnancy stands in causal relation to it. The following case is one in which the renal condition developed shortly after parturition, and, although only of moderate severity, exhibited many of the conditions just mentioned."

A case was quoted in which patient on a Karell and salt free diet for five weeks showed no results.

"The result was not surprising, and bore out the view that the salt retention theory of the causation of edema in this type of renal disease is undoubtedly fallacious. This case gives striking proof that successful cure of the edema and ultimate recovery is more likely to follow the procedure based upon the view that the edema in chronic nephrosis is due to extrarenal causes, chief of which is the alteration in the blood chemistry referred to above. Briefly stated, the cause of edema in this type of nephritis (Epstein) is the decreased osmotic pressure of the blood resulting from the diminution of the protein content of the blood-serum, a condition directly due to the steady loss of large quantities of albumin in the urine. The altered condition of the blood-serum (and the consequent reduced osmotic pressure) favors the absorption and retention of fluid by the tissues. Hence the great edema and oliguria.

*Read before Valley Medical Association, in Staunton, May 26, 1921

"The increased lipoid content in the blood which occurs in chronic nephrosis, indicates a state of impaired nutrition, and constitutes an additional disturbing factor in the physico-chemical state of the blood. The indications for the treatment of such cases rest in the facts mentioned, and therefore are: first to increase the protein content of the blood, and thus restore its osmotic power; second, to remove the excessive lipoids. To effect this a diet is necessary which is rich in proteins and poor in fats. Starchy foods are limited in order to promote the maximum assimilation of proteins and to lessen the production and retention of water. Fat is limited to lessen the amount of lipoids."

Mrs. C., age 40. Complaint, swelling of feet and legs.

FAMILY HISTORY. Nothing important except aunt had swelling similar to patient.

PAST HISTORY. Had diphtheria and scarlet fever as child, typhoid fever twenty years ago, tonsillitis as child, but not for some years.

Voids freely; does not have to get up at night. Married seven years, no children and no miscarriages, periods regular and without pain. Patient first noticed in July, 1919, swelling of feet and ankles, extending up to the knees. After a night's rest swelling would disappear.

I saw her first in September, 1919, at which time there was decided oedema, extending up to knees. I put her to bed for five weeks on milk diet, when oedema subsided, only to return when allowed up. I put her to bed again about the first of November, but this time the oedema did not subside with rest in bed, and in addition she began to show oedema of hands and face; by middle of November she showed general oedema of body.

Only slight dyspnea on exertion, and that only recently, no dizziness, no headache, no nausea. In fact, no physical complaints except oedema. Heart sounds normal, pulse 78. Blood pressure, systolic, 130; diastolic 80. Urine showed sp. gr. 1018, marked amount albumen and many hyalin and granular casts.

I made a diagnosis of chronic parenchymatous nephritis. As patient was not respond-

ing to treatment, I referred her to a physician in Richmond, Va., November 19, 1920.

His diagnosis was diseased tonsils, alveolar abscesses, chronic glomerulonephritis and simple goitre. While in Richmond, she had her tonsils removed and several teeth extracted. She returned home December 20, 1920, and showed slight increase in oedema over when she left in November. He advised her to rest in bed for about half of each day, restricted salt, acids and proteids. I followed his advice but patient continued to get worse, so, on February 1, 1920, I referred her to a physician in Baltimore, Md.

In a letter from this doctor to me, March 2, 1920, on her return home, he states: "Physically she shows the characteristic appearance of a chronic nephritis with evidence of slight anemia," and gave a very grave prognosis.

Her oedema became more marked so that you could press with finger any place over her body and leave deep imprint.

She began to show marked ascites by the first of July, which became so marked and gave her such great discomfort in breathing (she had to be propped up in bed to breathe with any comfort) that I did an abdominal paracentesis July 28, 1920, withdrawing two and a half gallons of fluid, and puncture drained freely for three days after operation.

August first, I had nurse give her a sweat for one hour each day. This was done by wrapping her in blankets and applying hot water bottles around her.

August 11, 1920, ascites had returned to same degree as before tapping. Then I decided to try her on a high proteid diet, based on the fact that she had a normal blood pressure, systolic 130, diastolic 80, normal heart sounds, except weak, and practically little or no cardiac enlargement.

Her output of urine August 12 was three ounces in twenty-four hours and, while not measured accurately before, had been very scant for the preceding week.

I gave her the following diet August 12, 1920.

	Diet	F.	GRAMS	
			P.	C. H.
Water	240 c.c.			
Milk (skimmed)	360 c.c.	3.5	12.6	14.4
Coffee	180 c.c.			
Eggs (white)	8		32	
Crackers	2			
Veal Chop	1	3	7	

Chicken	2 oz.	10	16	
5% vegetables	8 $\frac{1}{3}$ oz.			12.5
10% vegetables	3 $\frac{1}{4}$ oz.			10
Orange	1			13
Broth	220 c.c.		5.2	

Total grams	16.5	67.2	47.5
Caloric value	117	244.8	190
Total calories	551.8		

Urine output in ounces, with intake of 32 ounces in 24 hours.

August 12	3	August 21	60
14	16	23	48
15	32	25	44
17	32	27	64
18	40	29	64
19	56		

August 16. Less oedema in legs and abdomen.

August 18. Decided reduction in oedema in legs; right leg nearly normal. Abdomen same as 16th.

Addition to diet: One veal chop and one orange.

Increase F. 3, P. 7, C.H. 13.

Caloric increase, 142.7 calories.

August 23. Added white one egg, one cracker, 1 2-3 ounces 5% vegetables.

Increase proteid three per cent. C.H. two and one-half per cent.

Total calories to date 700.8.

Only slight oedema remained and that over tibia in both legs. None in tissues over abdomen, face, back, arms or hands. Decided reduction in ascites. Heart sounds normal, apex felt 5th interspace inside mammary line.

August 26. Urine examination shows.

Sp. gr. 1018, albumen abundant; reaction acid; color, straw. Microscopical examination shows marked reduction in casts. Added to diet, 1 ounce oatmeal, crackers to make one ounce and white one egg.

F. 21, P. 90.2, C.H. 102 $\frac{1}{2}$.

Total calories to date, 959.8.

September 6. Slight oedema over tibia, both legs; otherwise, no oedema. Urine 64 ounces a day, up in chair one hour twice a day. Added to diet 40 c.c skimmed milk, 80 c.c. broth.

September 9. Up in chair two hours twice a day; all oedema gone.

September 13. Slight oedema in ankles after being up second time the day before. None on this date, so allowed up four hours twice a day.

September 24. Patient's weight 105 pounds; allowed out in automobile.

Sept. 28.	Diet	GRAMS		
		F.	P.	C. H.
Water	240 c.c.			
Milk (skimmed)	800 c.c.	8 $\frac{1}{2}$	2.9	35.8
Coffee	180 c.c.			
Eggs (white)	10		36	
Crackers	1 oz.	3	3	20
Veal chops	2	6	14	
Chicken	2 oz.	10	16	
5% vegetables	15 oz.		7.5	15
10% vegetables	3 $\frac{1}{2}$ oz.		1 $\frac{3}{4}$	7
Oranges	2			23
Oatmeal	2 oz.	4	10	40
Bread	3 oz.		9	54
Apple	2 oz.		.5	6
Potato	2 oz.		2	12

Total 31 $\frac{1}{2}$ 131.5 212.8

Total caloric value, 1691.2 calories.

October 5. No oedema. Can walk around to do shopping and look after home. Weight 107 $\frac{1}{2}$.

November 26. Albumen has not diminished but only occasional cast with centrifugalized specimen.

April 5, 1921. Albumen diminished $\frac{1}{2}$. Heart normal. Blood pressure, systolic 125, diastolic 85, haemaglobin 70 per cent. At present, nine months after starting high protein diet, she feels well, is able to lead a normal life. She has no oedema and aside from the albumen in her urine shows nothing abnormal on physical examination.

NASAL (SPHENOPALATINE MECKEL'S) GANGLION NEUROSIS AND HYPERPLASTIC SPHENOIDITIS.*

By HERBERT R. ETHERIDGE, M. D., Norfolk, Va.

As far as I can find out, the first reference to this syndrome was first described by Dr. Greenfield Sluder in 1908. To understand better this condition I shall try to explain the anatomy.

ANATOMY.

The nasal ganglion, also known as Meckel's, the Sphenopalatine Ganglion, is a small triangular, reddish-gray body with the apex backwards, situated in the upper portion of the sphenomaxillary fossa, flat in its mesial surface, convex on its lateral, and measures about 5 m.m. in length. It lies in close proximity to the sphenopalatine foramen and just be-

*Read before the Eye, Ear, Nose and Throat Section of the Norfolk County Medical Society.

neath the maxillary branch of the trigeminal nerve. It is regarded as belonging to a series of sympathetic nodes and consists of an interlacement of nerve-fibres in which are embedded numerous sympathetic neurones.

Roots.—The sensory root consists of two and at times three short stout filaments, the sphenopalatine nerves, which pass directly downward from the lower margin of the maxillary nerve to the upper border of the ganglion. While some of the fibres of this root are axones of the sympathetic ganglion cells, the majority are dendrites of the cells of the Gasserian ganglion which pass through in part, but mostly around the ganglion. The motor root is the great superficial petrosal nerve which, in all probability, carries sensory as well as motor fibres.

Arising from the facial nerve in the facial canal, it passes through the hiatus Fallopii and a groove in the petrous portion of the temporal bone and then under the Gasserian ganglion to reach the cartilage occupying the middle lacerated foramen. Here it is joined by the sympathetic root, the great deep petrosal, which is a branch from the carotic plexus. The two great nerves fuse over the cartilage at the middle lacerated foramen to form the Vidian which traverses the Vidian canal to enter the sphenomaxillary fossa to join the nasal ganglion. In its course through the Vidian canal, the Vidian nerve gives off a few nasal branches, composed of trigeminal and sympathetic fibres which supply the pharyngeal ostium of the eustachian tube and the posterior part of the roof of the nose and nasal septum. While in the canal the Vidian receives a filament from the otic ganglion.

BRANCHES.—Ascending or orbital consists of several small twigs which enter the orbit through the inferior orbital (sphenomaxillary) fissure and proceeds within the periosteum to the inner wall of the orbit, passing through the posterior ethmoidal foramen and through the foramina in the suture behind that foramen to be distributed to the mucous membrane which lines the posterior ethmoidal cells and the sphenoidal sinuses.

The internal or nasal branches are derived in part from the inner side of the ganglion, but are also largely made up of fibres which pass from the sphenopalatine branches of the maxillary nerve without traversing the ganglionic substance. They are disposed in two

sets, the lateral and the medial posterior superior nasal branches.

The lateral posterior superior nasal branches are six or seven small twigs which pass through the sphenopalatine foramen, and are distributed to the mucous membrane covering the posterior parts of the superior and middle turbinates and to the lining membrane of the posterior ethmoidal cells.

The medial two or three in number pass inward through the sphenopalatine foramen and cross the roof of the nasal fossa to reach the back part of the nasal septum. The largest nerve of the set, the naso-palatine nerve, runs downward and forward in a groove in the vomer to the incisive (anterior-palatine) canal, where it communicates with the nasal branch of the anterior superior alveolar nerve. The two naso-palatine nerves then pass through the foramina of Scarpa in the intermaxillary suture, furnishing twigs to the anterior premaxillary part of the hard palate behind the incisor teeth. Here they communicate with the anterior palatine nerves.

DESCENDING BRANCHES are the great or anterior, the posterior, and the middle (external) palatine nerves. They are in part derived from the ganglion and in part are directly continuous with the sphenopalatine nerves.

The great or anterior palatine nerve arises from the inferior angle of Meckel's ganglion and passes downward through the posterior palatine canal, accompanied by the descending palatine artery. Emerging from the canal at the greater posterior palatine foramen, it divides into two or three branches, which pass forward in grooves in the hard palate and supply the glands and mucous membrane of the hard palate and the gums on the inner aspect of the alveolar border of the upper jaw. During its course through the posterior palatine canal, the anterior palatine nerve gives off the posterior inferior nasal nerves which pass through small openings in the perpendicular plate of the palate bone to supply the mucous membrane covering the posterior part of the inferior turbinate and the adjacent portions of the middle and inferior meatuses of the nose.

The posterior or small palatine nerve passes downward through a lesser palatine foramen and enters the soft palate supplying it and the uvula and tonsil.

The middle palatine nerve, the smallest of

the three, traverses a lesser palatine foramen supplying the tonsil and the adjacent part of the soft palate.

POSTERIOR BRANCH.—The pharyngeal branch passes backward and inward through the pharyngeal palatine canal distributed to the mucous membrane of the upper part of the pharynx and posterior nares to the opening of the eustachian tube and the lining of the sphenoidal sinuses.

As the nasal ganglion is made up of sensory as well as sympathetic fibres, we naturally would expect a sensory and a sympathetic syndrome, and such is the case. The nasal ganglion by actual measurements lies at times as close as one or two m.m. from the nasal mucosa or may be as deep as seven or nine m.m., or it may lie at times just under the mucosa; hence, we can readily appreciate the fact that it can easily be affected by inflammatory processes of the sphenoidal or posterior ethmoidal sinuses, or extension from the nose proper.

ANATOMICAL RELATION.—The nasal ganglion lies in the upper portion of the sphenomaxillary fossa. This fossa is formed above by the wall of the sphenoid sinus and the sphenoidal process of the palate bone, in front by the wall of the maxillary sinus, behind by the anterior surface of the great wing of the sphenoid, and internally by the vertical plate of the palate.

DUE TO ANATOMICAL VARIATION, the sphenoidal sinus may form the entire upper boundary and also the posterior boundary, or a post ethmoidal cell may bound the anterior half of the upper part of the fossa. The ganglion is situated high in the sphenomaxillary fossa close to the plane of the sphenopalatine foramen which is accurately placed just posterior to and immediately above the posterior tip of the middle turbinate.

THE NEURALGIC SYNDROME.

TYPICAL CASE.—A patient will give a history of a coryza, sometimes mild, and almost forgotten, or one of great severity which produced a post ethmoidal-sphenoidal empyema, later pain began at the root of the nose in or about the eyes, the upper jaw and teeth, sometimes lower jaw and teeth, extending to temple and above the zygoma to the ear, emphasized at the mastoid, but severest at a point 5 cm. back of the tip; thence, reaching backward by way of the occiput and neck, it may

extend to the shoulder blade, shoulder (perhaps to the axilla and breast) and, in severe attacks, to the arm, forearm, hand and even the fingers.

There also may be a sense of stiff or aching throat or of pain, oftener itching in the hard palate or pain inside the nasal fossae, or a feeling that the teeth are too long or a metallic sense of taste or scotoma scintillans or salivation; a sense of stuffy ears which inflation will relieve perhaps for only a short time (explained possibly as follows); due to the pain the motor function of the ganglion is injured and the levator palati fail to act properly.

THE SYMPATHETIC SYNDROME (which is less common) may supplement the previous condition or it may occur alone. It consists chiefly in a vaso-motor and a secretory phenomenon. Like the neuralgic type, inflammation has usually preceded. The patient may be aroused by a slight coryza, that has had little time for development. Regardless of the season, the patient is seized with a severe sneezing and nasal congestion and profuse watery discharge. The internal nose is sensitive. The eyes are reddened and bathed in tears; pupils may even be dilated. Photophobia, accommodation is difficult or impossible; asthma may even be present.

DIAGNOSIS.

First. Cocainization of the nasal ganglion stops the pain of a lesion in the ganglion proper.

Second. Intra-sphenoidal application of cocaine stops the pain of a lesion of the maxillary and vidian.

This is one place where we would expect the X-ray to help us, but in about half the cases it gives negative results. I have seen cases where the nose seemed as near normal as the majority of noses which presented no symptoms—inspection was negative; cocainization and suction negative; transillumination and X-ray negative—and yet the patient complained of the neuralgic syndrome and suffered untold agony. Of course, if a patient complains of neuralgia referable to the nose and we find a purulent sinusitis or polypi, we can understand and appreciate the symptoms of which he complains, and, by transillumination and X-ray, we can arrive at the sinus or sinuses affected, institute treatment and, as a rule, perfect a cure. But when a patient complains, as they sometimes do, of the nerve to

the upper or lower teeth, as they express it, feeling stretched or pulling or burning, or the teeth feeling too long or separating, no wonder we sometimes call them neurasthenics. And I want to say here that I have long since given up the idea that there is such a thing as neurasthenia, per se.

TREATMENT.

Medical: One or more applications of 90 per cent. cocaine to the ganglion area is sometimes curative. Application of 2 per cent. silver nitrate, .4 solution gaseous formaldehyde, .5 phenol with .1 iodine as a wash. In the stubborn cases injection of 5 per cent. phenol alcohol.

The ganglion is cocainized by an applicator (cotton tipped) carrying a drop of saturated (90 per cent.) watery solution of cocaine placed under the tip of middle turbinate. This is allowed to remain five minutes, then it is removed and placed over the sphenopalatine foramen just posterior and above the posterior tip of the middle turbinate and remains five minutes. This procedure should relieve the pain if it is caused by a lesion in or distal to the ganglion; but, if found by past experience that the pain repeatedly returns, then a more radical treatment should be tried. If application of silver or formaldehyde have failed, the 5 per cent. phenol alcohol should be tried. The ganglion area is cocainized as above and, with a straight needle made for the purpose, $\frac{1}{2}$ c.c. of 5 per cent. phenol in 95 per cent. alcohol is injected. Sluder prefers a straight needle and places the point of the needle 2 m.m. anterior to the point in the middle meatus marked by the origin of the posterior tip of the bony middle turbinate directing the point of the needle backward, upward and slightly outward, piercing the anterior wall of the sphenomaxillary fossa and carrying the point of the needle backward .66 cm. Sluder confesses that this sounds easy, but is very hard to accomplish for many reasons, and, judging from the few I have tried, I thoroughly agree with him.

We all know that it is usually the most inaccessible side of the nose that becomes involved, if we are dealing with a one-sided condition (which probably explains itself) due to poor drainage, and besides, if the septum is deflected and the inferior turbinate is situated relatively high and the nose is small or blocked from other causes, we have a very

poor chance of placing the needle in the correct place. However, if a straight needle cannot be used we may try a curved one and attempt to go directly into the sphenopalatine foramen. I, for one, like the curved needle, as we can feel the resistance offered or, better, not offered, when tissue alone is pierced, and judge the distance rather than measure the distance we pass or force a needle through a thin plate of bone.

The injection is followed by a slight sense of pain which the patient recognizes as different from his neuralgia and which lasts from two to three hours. Only one untoward consequence has followed injection by Sluder, when the abducens was paralyzed and remained paralyzed for three months.

The injection in old and severe cases may be necessary from three to ten times at intervals of from two to three weeks. Usually, if successful, three times is sufficient.

Surgical: This treatment is resorted to after other methods have failed and is the proper treatment for the cases of hyperplastic sphenoiditis or hyperplastic sphenomethmoiditis.

But there comes a difficulty in diagnosis. It is not so difficult to diagnose the neurosis, as cocainization will usually relieve the pain, but some cases appear to have a normal nose even after all our aids, examinations, suction, transillumination and X-ray are put to work, but, when a middle turbinectomy is done and the anterior ethmoids are removed, small polypi are found in almost every cell, including the post ethmoids and the sphenoid, and even high up in the naso-frontal duct.

When you operate on a case like this, you do not know when to stop, as each curettement finds diseased tissue and leads you on to other cells involved, and yet, as much as we fear we may overdo, we cannot stop as long as diseased tissue is encountered for fear that what we leave behind might still continue to produce the symptoms. So usually these operations are quite extensive and nerve-racking, as much for the surgeon as for the patient, and perhaps even more, as he knows better the danger and possible consequences.

Each case is a real study in itself and a much more complete history should be taken than we nose and throat men are in the habit of taking. Of course, in some cases, such a radical operation is not necessary; we can lo-

cate the trouble as best we can and attack that, but, if we find more disease after the removal of the supposed cause, are we justified in concluding the operation? I answer no, unless the life of the patient is endangered by continuing.

There are two points that Sluder suggests which I would like to mention, one of which we have noticed often, i. e., the relative frequency of asthma connected with certain types of this condition—nasal asthma, so called. Certain cases seem to bear out the fact that it is the autonomic sympathetic nerves of the nasal ganglion which are involved and which cause the vaso-motor and secretory phenomena and also the pain referred into the neck, shoulder, arm, etc.

The Vidian neuralgia and these referred pains result by virtue of the sympathetic fibres which arborize about cells in the spinal ganglia of the nerves which supply the neck and upper extremity. Also, the anatomical connection of accelerator fibres for the heart and the vaso-motor fibres for the lungs with the ganglia through which the cervical sympathetic passes (lower cervical and first thoracic) explains some of the cases of asthma of nasal origin, and the path of the impulses is from the nasal ganglion through the Vidian upper, middle and lower cervical, and first thoracic to the heart and lung fibres.

I have seen five cases in all during the last year which I have classed as "Nasal Ganglion Neurosis." I shall give briefly the history, diagnosis, treatment and results of a few cases.

Case No. 1. Miss D; aged 31.

Past history unimportant prior to 1918. Patient had severe attack of "flu" in 1918. Following the attack pain occurred over left eye, at first of a dull character, radiated to zygoma, passed to lower jaw, and at times to left ear. Left ear-drum felt as if it were drawn inward by suction. The pain in the lower jaw was the most annoying, as the teeth felt as if they were too high and at times there was a dull toothache. She consulted a dentist, who assured her that the teeth were in good condition. Later, however, one tooth became abscessed and was pulled with no apparent relief. Four months later, the pain having continued, she developed a feeling as if the head were in a vice with more or less locali-

zation of pain between the tip of the left mastoid and the ramus lower maxilla.

She consulted a doctor at Hartford, Conn., who sent her to a surgeon in New Britton, Conn., for gasserianectomy. She was under observation for over two weeks, and she tells me that one day she was prepared for operation, but the surgeon forgot his instruments and consequently could not perform the operation. The next day, after more careful questioning, he decided he could not make himself believe she had tic douloureux and was discharged after a month's stay unbenefited, except perhaps for the rest in bed.

She then came home and consulted a dentist who, after an X-ray of the teeth, pulled a molar in the left lower jaw. At this time, burning of the gums of the upper jaw occurred and a feeling of the incisor being too long and a terrible itching of the roof of the mouth. She finally consulted an internist of the city who, after making a complete examination, including X-ray of sinuses, concluded that she had left ethmoiditis and possibly left sphenoiditis. He referred her to me in October and, as she was wearing glasses, R-1.25 —1.25 axis 95 20/40 plus; left plano. I became suspicious, as the left glass was a plano. A refraction under drops was done and R-1.75 axis 1.00 = 20/10 and left with plano, giving 20/10, which, although it gave better vision, did not relieve her symptoms.

Nose—Inspection normal in appearance, slight deflection of quadralateral cartilage high up on left, almost hiding left middle turbinate. No pus on suction. Transillumination negative. I found that I could entirely relieve the pain by an application of cocaine over the sphenopalatine foramen. I injected 7 m. of 5 per cent. phenol alcohol and, when she returned two days later, she reported she was better. That night and the next she slept well for the first time in months, and the drawing sensation of the nerve in the left lower jaw has to date disappeared. Four days later there was return of pain, and attempted to inject ganglion but failed, as most of the fluid passed down the pharynx. Pain was so severe I had to give codeine, grains $\frac{1}{2}$ p. r. n. Four days later I did a local left middle turbinectomy and sphenoid exenteration, enlarged the naso-frontal duct and opened the sphenoid.

Findings: The scroll of the middle turbinate

was very hard, suggestive of rarefying osteitis and a few polypi were found in the sphenoid. From this time on for several days at a time she was almost entirely free of pain. Although I had made the sphenoidal opening as large as possible, it daily grew smaller, so on the 22d of December I removed all of the anterior wall of the sphenoid and broke up a few adhesions and removed a few of the anterior ethmoid cells around the naso-frontal duct that I had failed to remove at the first operation. For over a week the patient was free of pain. A few days later pain developed, but not as severe as formerly.

I tried violet rays without results. At the time there was a slight crusting around the naso-frontal duct and, on washing out the left frontal sinus, a solid blood-stained mucous clot was expelled, and it was necessary to remove this about every two days to relieve the pain over the left eye, which was more or less constant and was the only pain complained of, except at times a slight pain in the lower jaw.

Much to my sorrow the right side began to pain in the same way as the left had started, and I was determined to try and relieve this as quickly as possible; I did the same operation on the right as I had done on the left, and it seemed to relieve all the right sided symptoms. Today, although she is not cured, she says she is almost well and is sure she will be entirely relieved. I hope so, but would dislike to give a prognosis. She says she knows she would have been dead by this time if she had not found relief.

Case No. 2. Mrs. H; aged 45. Referred to me for headache, gives a history of scabby nose since childhood, but right sided headache for several months beginning after arising in morning and lasting until 5 p. m., as a rule.

Examination of nose showed right side very large; filled with scabs and mucous membrane bathed in a purulent discharge. Marked atrophic condition on right side was so marked that middle turbinate could scarcely be distinguished from the bulla cartilaginous septum deflected to the left. Left side showed no apparent scabs, but marked catarrhal condition of lining membrane.

Cleansed nose; used suction which produced frightful pain which lasted for twelve hours. No pus expelled, but I could not but think I could see a little drainage from the anterior

ethmoid cells. Probed frontal which was open. Transillumination, negative, except right frontal transilluminated poorly. X-ray was entirely negative except it showed very large ethmoid cells. On March 2d, I punctured right antrum under local anaesthetic and washed it, return clear. Removed with Sluder knife middle turbinate high up near cribriform plate, ethmoid cells, opened sphenoid and enlarged naso-frontal duct. Each cell was filled with a small polypus. Here was an ozena secondary to a hyperplastic sphenoiditis. This sounds paradoxical, I admit, but such was the case as far as I can determine.

She had no pain whatever after operation except on the fifth day when I removed a large blood pus cast from the right side. Her scabby condition has lessened to a large extent and not a suggestion of any pain has yet occurred. Ten days after operation I noticed the right sphenoid was filled with several large polypi to which I applied saturated solution of silver nitrate, and ten days later, when I saw her last, the polypi had entirely disappeared.

Case No. 3. Mrs. G. W. H., aged 33. Married, mother of two healthy children.

Past history unimportant, except that she gives a history of having had influenza, to which she attributes her present trouble. At the time of this sickness she had rather severe frontal headache and several asthmatic attacks. After apparent recovery there developed a constant, dull frontal headache, chiefly over left eye, temple, left side of head, localizing under left ear between tip of mastoid and ramus of inferior maxilla. The pain at times was so intense she could not attend to her household duties and spent most of her time in bed. At this time probably the most annoying symptoms were light flashes before her eyes, even in a dark room with closed lids. She also complained of hot flushes to face, as she expressed it.

Nasal Examination: Inspection showed slight deflection of septum; no evidence of nasal discharge. Transillumination negative; suction negative. From her symptoms alone, sphenoiditis was suspected and she was sent for X-ray examination. Report showed slight cloudiness of right frontal and some increased density of left ethmoid. I saw her first on March 30, 1920, and operated on her

September 28, 1920, under local anaesthesia. Performed a double middle turbinectomy, double ethmoidectomy, opened both sphenoids and enlarged both naso-frontal ducts. Tissue removed showed macroscopically a hyperplastic condition, small polypi being found in almost every ethmoid cell. I was unable to do as thorough an operation as I would like to have done, as the patient became very nervous and I was compelled to stop before I had completed the operation. She spent a week at the hospital and for several months was much improved. After returning to her home in the county, eight days after operation, she had a severe nasal hemorrhage which necessitated her return to the hospital. About a month later, I did a refraction under a mydriatic and found a simple hyperopic astigmatism which I corrected with proper glasses. Nasal examination at this time showed three rather large polypi in right ethmoidal region. She returned home and for two months suffered with pain. On March 8th, I took especial pains to thoroughly cocainize the nose with cocaine mud and removed polypi and the remains of posterior tips of middle turbinates. Removed a few posterior ethmoid cells, enlarged sphenoid openings, and enlarged left naso-frontal duct, but could not locate right naso-frontal duct which I had previously enlarged and which I probed immediately before operation.

Patient bled profusely, which necessitated packing. She complained of much pain during the night and bled slightly. Removed packing after 24 hours; patient complained of extreme photophobia and during the next few days ran a slight temperature, the highest reaching 101; complained of severe headache and flashes of light before eyes. Patient thoughtlessly blew nose and several hours later developed left earache. The drum was red and retracted; relieved by one inflation. Several days later photophobia and pain entirely disappeared and the patient was discharged. Received a letter from her a few days ago saying she sleeps soundly twelve hours each night and one or two hours during the day. She says her appetite is better than it has been for years, and that she has been almost entirely free from pain except at times a dull ache over the left eye.

Case No. 4. Widow; aged 45.

Past history: Periodic headache regularly

several times a month, so severe that patient had to remain in bed. These attacks are accompanied with nausea and sometimes vomiting. Says she had an abdominal operation performed a few years ago with the hope that the headache would be relieved. Pain at the time of attack is so severe that she has had to resort to morphine in large doses for partial relief.

Sent to me by a local physician with the request to examine sinuses. At this time she had no headache. On examination, the nose appeared as normal as you usually see them, except that there was a slight blocking of the middle turbinate region due to a septal deflection and a rather narrow nose. Suction and transillumination were negative; this was Thursday, January 20th, and she said she would have a headache on the following Tuesday; I felt like saying, "Well, have it on Tuesday." She did not miss it far, as she called me on Thursday, January 27th, about 8:30 A. M. I found patient in bed with a towel tied tightly around her head, suffering so severely that she could scarcely keep still. The pain was located over the left eye and temple and extended back of the left ear and down the neck. Temperature normal, pulse 80. I sprayed nose with 4 per cent. cocaine, waited awhile and tried to applicate over the nasal ganglion, but the middle turbinate seemed attached to septum and I had to use force to reach region of the ganglion. I used 10 per cent. cocaine, the strongest I had with me at the time. I was able only to slightly relieve the pain. I left a tablet of morphine, grs. $\frac{1}{4}$, to be taken if pain continued and advised the use of a hot water bag. I returned at 1:30 p. m., and applicated with 20 per cent. cocaine. While attempting to applicate over the ganglion area, I felt the applicator slip deep into the nose and I thought at the time that I had accidentally slipped into the ostium of the left sphenoid. I removed applicator and the patient said, "I smell an awful odor like gas," and a second later I placed another applicator in position and I also got the odor, which nearly knocked me down. I must have released retained gas in the sphenoid. A few minutes later the patient suddenly sat up in bed, tore the bandage from her head and looking at me as if demented, said, "I haven't got a pain." Her mother standing by was greatly alarmed and insisted that she was dying. I

assured her her daughter was all right. The pain was relieved for about an hour, but returned to a slight degree and lasted several hours. On the 19th she had a similar headache relieved by cocainization. On the 28th, I did a local left middle turbinectomy, ethmoid exenteration, opened sphenoid and enlarged the naso-frontal duct. I found no macroscopic evidence of disease; she suffered severe pain for several days after the operation. Has had two slight headaches since, but they were not sufficient to confine her to bed. Just a few days ago she had one rather bad headache, which seems to have been brought on by rather undue excitement. I am very much in doubt about the final result of this case.

After seeing a few of these cases, we no longer dread purulent sinus cases so much, because here we have something definite to work on and, as long as we can keep up sufficient drainage, we can usually allay the pain by suction alone. If the case is acute, we can usually perfect a cure without operation, in a short time. Unless some severe complication arises, which is relatively rare during the course of treatment, we usually have nothing to fear. But when we get a stubborn case of nasal ganglion neurosis, we are not at all sure of our ultimate results and far from sure of a permanent cure. However, knowing how much these patients suffer, we should not be discouraged if we do not entirely cure them. They appreciate improvement more than you would imagine, as they have usually been the rounds and some have had severe operations far distant from the site involved.

How many of us in the past have had patients sent to us from family physicians with the history of a dull, almost continuous headache or sharp pain over the eye, in the temple, shoulder, etc., with a request for examination of the sinus, and our report, even after a thorough examination, including an X-ray, shows no evidence of sinus trouble found. We have even had them return and, for fear that the eyes were at fault, we have prescribed and advised them to wear glasses for an error from which, under ordinary conditions, we would expect no symptoms, and we have, perhaps, gone so far as to attribute the headaches to the tonsils, which were only slightly diseased, and which after removal did not relieve

the symptoms. I feel sure that I for one have seen a few cases at least which I now feel were cases of nasal ganglion neurosis.

We have all been struck by the fact that some cases of sinusitis are accompanied with depression out of all proportion to the severity of the disease and the area involved; but the cases of nasal ganglion neurosis are more depressed, as a rule, than the ordinary sinus cases, and I venture to say that if they could obtain narcotics they would all be drug addicts.

I have had them tell me that they would take anything, and at times they had suffered so long that they were tempted to commit suicide. This we can well understand, as the pain at times is almost unbearable and in extreme cases never entirely absent.

We must make ourselves recognize this condition, as it is much more common than we might imagine, and we should be grateful to Dr. Sluder for his careful presentation of this subject in his book, "Headaches and Eye Disorders of Nasal Origin."

New Monroe Building.

RESULTS OF OPERATION UPON ELEVEN HUNDRED WOMEN FOR DISEASE OF THE PELVIC ORGANS AND OUTLET.*

(Standardization of the Surgeon)

By G. PAUL LaROQUE, M. D., F. A. C. S., Richmond, Va

The present report is solely of *results* of operation upon *consecutive* cases of pelvic disease; none have been omitted. In no case have we declined to operate on account of the desperate condition of the patient, and in no case needing surgery has operation been postponed more than a short period of one day to two weeks for preparatory treatment and the opportune time. No one has died while *waiting* for operation; nor *without* operation from any cause save extensive and inoperable cancer.

Of 1100 patients operated upon;

Eighty per cent. required abdominal operation for pathology in the uterus, tubes and ovaries.

Seventy-five per cent. required operation upon the cervix, vagina and vulva.

*Read before the Richmond Academy of Medicine and Surgery, May 24, 1921.

Sixty to sixty-five per cent. required operation for pathology in both locations, abdomen and vagina.

Eight per cent. to ten per cent. required operation also upon the rectum and anus; and of women coming for operation upon the rectum and anus, over fifty per cent. need operation also for disease of the pelvic organs.

Fifty per cent. of women with pelvic organ disease also have disease of the appendix, and over fifty per cent of women coming to operation for appendicitis, between the ages of puberty and the menopause, also have disease of the pelvic organs.

Approximately five per cent. of women operated upon for pelvic disease also have definite pathology of the urinary organs; it is impossible to estimate the number of women with symptoms and disease of the urinary apparatus who need operation for pathology of the pelvic organs.

More than five per cent of women in this series of cases have needed operation for gall-bladder disease with or without stones; and over fifty per cent. of women with gall-bladder disease also have disease of the pelvic organs.

More than five per cent. of women operated upon for pelvic disease were operated upon at the same time for inguinal, femoral or umbilical hernia; and eighty per cent. of women operated upon for hernia have also needed operations for pelvic disease at the same time. Obesity, as a surgical complication has been recorded only in those cases in which, on account of excessive fat in the abdominal wall, it has seemed wise to remove by lipectomy a sufficiently large piece to render the intra-abdominal pathology more easily accessible and operation safer. This has been done in approximately two per cent. of the cases.

The present series of cases does not include operations on account of eclampsia, placenta previa, contracted pelvis or other obstetric indications, nor on account of such systemic conditions as tuberculosis and pernicious vomiting. These will be reported at another time as a separate series.

Women of child-bearing age and married have constituted more than half of the total number of women in the present series, and in approximately ten per cent. of these their

previously existing pelvic disease has been complicated by pregnancy.

In the present series there were one of hysterectomy and two of myomectomy for fibroids of the uterus upon women bleeding furiously in labor; two of hysterectomy on account of incarceration and suppuration of the uterus and tubes during pregnancy; one removal of a large ovarian cyst during pregnancy; one hysterotomy for incomplete miscarriage from one side of a double uterus; sixteen cases of ruptured tubal pregnancy, one of an almost full term foetus, the others of two to five months; one suture of ruptured uterus during labor at term; and many cases of removal of retained material following miscarriage from displaced and inflamed uteri and in the presence of tube inflammation, ovarian cysts and fibroids of the uterus.

Approximately three per cent. of patients in this series have suffered with anaemia of less than fifty per cent. hemoglobin. There have been recorded a considerable number of heart, lung and kidney lesions, malaria, lactation, hookworm disease, menopause and other psychoses, neurasthenia (?), hysteria (?), old age, and other non-surgical diseases. Heart and kidney lesions have produced an amount of fear of operations totally unjustified by the results. I have known of only one death which by any stretch of the imagination could be attributed to these diseases and this was a case of dilatation of the heart secondary to acute dilatation of the stomach in a woman three days after hysterectomy for fibroids. Hyperthyroidism adds some risk as shown by one death in this series from hyperthyroidism following a simple easy operation for pelvic disease. Milder forms of hyperthyroidism are present in a large number of women with pelvic pathology and are commonly benefited by operation for the cure of pelvic disease. Two or three true diabetics have been held under treatment for this disease for an appropriate time with perfect satisfaction in the relief without complications of their pelvic disease and without bad effect upon diabetes.

Dilatation of cervix and removal of loose material from uterus	880
All but 4% of these required other operations.	
Repair, amputation and destructive cauterization of cervix	365

75% of these received also abdominal operations at the same time.	
Repair of perineum	330
For rectocele and cystocele	314
For rectocele and torn sphincter ani.....	8
For rectocele and rectal fistula	7
For vagino-vesical fistula	1
For complete prolapse of uterus, bladder and rectum	3
90% of these required other operations at the same time and 70% of them for abdominal disease.	
Miscellaneous operations upon the vulva, urethra, rectum and anus for vulva cysts, abscesses, urethral caruncle, hemorrhoids, fistula in ano, anal ulcer and ischia rectal abscess, approximately	100
Ligament suture of uterus to correct displacement	550
Over 80% of these received additional operations at same time.	
Removal of tubes (independently of hysterectomy)	175
Of one tube.....	135
Of both tubes	40
Suppurating at time of operation.....	125
Tubal pregnancy	16
Nearly 100 per cent of these have required additional operations at the time of salpingectomy, for such pre-existing pathology as lacerated cervix, displaced uterus, ovarian cysts, fibroids, etc.	
Five of the above cases had tuberculosis of tubes (bilateral), all the others were of pyogenic infection.	
Removal of ovaries 214, and excision of cysts 106	320
Simple non-inflammatory	210
Suppurating at time of operation.....	110
Two of the ovarian tumors were malignant, two hematoma, six or eight were twisted on their pedicle, seven were a part of pan-hysterectomy for cancer of the uterus.	
In all but about 40 of the total 320 women, 1 have succeeded in preserving at least a portion of one ovary.	
Removal of uterus and uterine tumors.....	225
A. Abdominal route	200
Complete	10
For cancer	8
Obvious	3
Microscopic	5
For complete lac. cervix	2
(With inflam. disease of uterus and tubes).	
Subtotal	190
For fibroids	175
(With and without suppuration)	
For suppurative disease	15
(Without fibroids)	
Vaginal route	3
All for complete prolapse in old women.	
Removal of fibroids and other tumors, leaving uterus	25
Additional operations in cases requiring hysterectomy included, especially high amputation (usually with electric cautery), of the torn and infected cervix (25% of cases), removal of ovarian cysts (over 50% of fibroid cases), etc.	
Operations for pelvic abscess, suppurating tubes and ovaries	250

Palliative abdominal puncture and drainage	1
Removal of one or both tubes and ovaries..	200
Removal of tubes and ovaries and suspension uterus	175
Removal of tubes and ovaries and uterus...	65
Repair or amputation (electric cautery) of cervix	50
Suture of ulcerated holes in bowel.....	12
Wounds are closed without drainage in suppurative disease in 60% of cases, with drainage in 40% of cases.	

Additional abdominal operations other than those upon pelvic organs, include:

Appendectomy, all cases unless it has been removed previously, or serious shock exists—approximately	850
(In over 50% of women with pelvic disease the appendix is diseased).	
Gall bladder operations (usually simple drainage)	55
Repair of abdominal hernia	65
Suture of bowel ulcerations	12
Miscellaneous abdominal operations include an occasional suture of movable kidney and caecum, removal of excessive fat (2% of cases), etc.	

There have been 13 deaths in the 1100 cases; 8 of these occurred in the first 300 cases; 4 in the second 300 cases and 1 in the last 500 cases.

All cases are propped up in bed whenever they please, usually after 5 to 7 days and, as soon as they feel equal to the trip after getting out of bed, they go home. There are many real advantages, other than economic, to the patient in getting up and out of the hospital early after operation, and we are shortening this time steadily and with great satisfaction.

603 East Grace Street.

DRUG THERAPY IN EPILEPSY.*

By VICTOR R. SMALL, M. D., Raleigh, N. C.
Assistant Physician, Dix Hill State Hospital.

The student of Grecian art and science is cognizant of the fact that about the year 400 B. C., Hippocrates wrote a description of the disease called epilepsy, characteristically describing the symptom-complex with such accuracy that to later writers was left little more than the adding of a few details. Yet, long before the time of this famous Greek, we find mention of this affliction in civil writings. We know that it existed among the ancients, for the earliest records speak of it. Through the following centuries, down to the present time.

*Read before Section on Therapeutics, Medical Society of State of North Carolina, sixty-eighth session, Pinehurst, N. C., April 26-28, 1921.

every generation has known it and, among civilized peoples at least, very few persons have not seen it, recognized it, and had stamped indelibly on their minds a mental picture of its manifestations. It is possible that through the ages more people have witnessed epileptic convulsions than have come in contact with any other disease, with the probable exception of the usual infectious diseases of childhood. Many students have given it attention and yet today there is probably no physical or mental disorder, the etiology of which we know less, and for which our treatment is so much based on conjecture and fanciful speculation.

For centuries efforts had been made to treat the epilepsies by sorcery, experimental surgery and empiric medicine. No doubt, the early followers of Aesculapius, who regarded epilepsy as a disease due to the retention of semen and who prescribed coitus for relief, found that their treatment met with greater favor among those afflicted than did Hector Boethius and others, who, recommended castration. Galen took the opposite view as to etiology, owing to the fact that seizures often came on during coitus, and attributed the cause to sexual excesses. His followers, therefore, recommended abstinence from sexual intercourse. We read that in the latter part of the sixteenth century, M. Hedoin, physician to the king of France, declared as being most efficacious, a remedy "prepared from various roots and the skull of a man who had died a violent death." Until recently, "snakes' heads soaked in rum" held high reputation in Australia and from this practice could probably be traced the advocacy of crotalin which was extensively tried in our own country within the memory of all.

Thus, from time remote to a very recent date, epilepsy has been considered a disease entity and has been theoretically attributed, first to one cause, then to another, and the treatment has been more varied still. We have today advanced beyond the age of sorcery but we have not entirely abandoned empiric formulas and experimentation is still rife in surgery. On many points we are as much in the dark as ever before and today we have no rational basis for the treatment of more than ninety per cent. of the cases of epilepsy.

The advancement that has been made has brought us to the recognition of the fact that epilepsy is not a disease entity, having always

the same etiology, but rather that it is a symptom-complex that may be a manifestation of widely different etiological factors in different individuals. Thus we have learned to recognize certain cases as being the results of physical traumatism; usually head injuries. We know others to be due to certain infectious diseases; most frequently syphilis. Endocrine dyscrasias undoubtedly account for a certain number of cases, and, when we happily have been able to establish the identity of some etiological factor, we know that we are dealing with a true case of symptomatic epilepsy and our treatment can be made specific. Yet, when after painstaking efforts, all the true symptomatic cases have been eliminated from any group of epileptics, there still remain some ninety odd per cent. of the cases that must be put down as "idiopathic" and for them our treatment must of necessity be symptomatic. Eventually, no doubt, we shall be able to eliminate many of the so-called "idiopathic" cases. We are just beginning to seek a cause for this disorder within the psyche of the individual and we may be astounded at what may ultimately be established as emanating from this source.

The chief manifestations encountered in the epileptic, aside from his ill-balanced, unstable, psychopathic personality basis, are; first, the convulsions themselves, second, the periods of mental disturbance preceding or following the attacks, and third, the terminal dementia. In the treatment of "idiopathic" epilepsy, this triad should ever be borne in mind and we should endeavor to alleviate not only the first but the second as well and at the same time attempt to stay the progressing mental deterioration. However, the symptomatic treatment for the convulsions themselves is the most important and, if they can be checked, we often do not have to deal with the periodic mental disturbances and the patients do not dement so rapidly.

If we attempt to correct the underlying disorders of the psyche, it is necessary to use psychic methods, but, as this paper was intended to treat of drug therapy, it will be so limited.

One axiom to bear in mind in the care of these cases is that it is always bad for the patient to become constipated. A majority of these cases have a tendency to become so un-

less closely watched, and in this we should not be negligent. The writer does not favor the continuous giving of mild laxatives, for often the bowel elimination will not be thorough even by their help. The salines are better and small doses of magnesium sulphate may be given twice each week or in some cases, every other morning. It is well to occasionally change the saline used and yet absolute dependence should not be placed on the salines alone. At intervals of not less than a week, and not greater than two weeks, the patient should have a more drastic purge. One or two compound cathartic pills, containing as they do, calomel, colocynth, jalap and gamboge, do very well, or often, better still, a dose of calomel itself; not a homeopathic broken dose of six or eight tablets of one-tenth grain each, but from five to ten grains, given in broken dosage, if you will. Other things being equal, the patient will have fewer convulsions if elimination by the bowel is ever free.

When we find a case that has suddenly begun having convulsions so frequently that there is a threatened development, or the actual existence of "status epilepticus," the chances are that we are dealing with a patient who, for several days at least, has not been eliminating well. Here we cannot wait to obtain action by drug catharsis but must resort to enemas. These should be copious, given by gravity, and as high as possible. When the enema has been expelled, if the attacks have not ceased, our next step should be rectal administration of paraldehyde. In the writer's opinion, there is no drug in our medical armamentarium that is so efficient in these conditions and in his experience it has proved effective in one hundred per cent. of cases. Because of its characteristic burning taste and odor and its irritating effects on the stomach, it is better to give per rectum. Apparently, absorption is more rapid when it is so given. For adults, the rectal dose should be at least four drams, diluted in one-half pint of warm water or salt solution. This should also be given high into the bowel. Usually, one such administration is sufficient but, if necessary, it may be safely repeated after three hours or sometimes after a shorter interval. It is safe to push the drug until results are obtained and so long as the patient is having convulsions he has not had too much paraldehyde. We have

at times found it necessary to control the convulsions of "status" in children with chloroform until the paraldehyde takes effect. Generally, this necessary control is of short duration for, when properly given, paraldehyde generally takes effect within from fifteen to thirty minutes.

In 1889, Hare stated in his essay on epilepsy, which essay was awarded a prize of four thousand francs by the Academie Royale de Medicine de Belgique, that; "it is to be laid down as a rule that the bromide treatment of epilepsy is 'par excellence,' the treatment employed on every occasion. **** Its use may be said to be indicated in every case of the disease." It is doubtful if this distinguished author, who is a recognized authority on therapeutics, would entertain this view today for, though the thirty odd years that have elapsed since that paper was written have not been especially gainful in regard to the knowledge obtained in the treatment of these cases, yet we have learned the fallacy of prolonged bromide therapy. Anyone who has observed a number of cases in which an attempted control has been made with the bromides, either alone or combined with chloral hydrate, is aware that the temporary beneficial results are more than offset by the resulting languid, drowsy, stuporous condition of the patient, his impaired mentality, and the hastening of his terminal dementia.

In a paper read before the twenty-third session of the Tri-State Medical Society of the Carolinas and Virginia,² the writer spoke of the value of luminal as a drug that may be given over a long period of time. The idea of using this drug was not original with him but was suggested by reports of Hoven,³ Grinker,⁴ and others. After reading the favorable comments on the value of this drug in these conditions, it was decided to try it on a series of cases at the North Carolina State Colony. Fifty cases were selected. These cases varied in age from nine to forty-five years. All were cases of so-called "idopathic" epilepsy and in no case was there a history of traumatism or any evidences either of syphilis or of disturbances of the glands of internal secretion. The urine was carefully examined before the beginning of the administration and, as a routine procedure, every two weeks thereafter. No case showing the presence of albumin or casts was started on the drug and in no case has an

albuminuria or other evidences of kidney irritation developed. As a routine method we gave each patient one tablet, containing one and one-half grains of the drug, at bedtime. A few cases in which results were most striking are as follows:

Case 1. S. B., female, age 16. Attacks since the age of 10. All major attacks and the average number per month before luminal administration was 23. Has been taking luminal for thirteen months and has had no attacks since taking the first dose of the drug. Has gained fifteen pounds and is mentally very much brighter.

Case 2. S. M., male, age 13. Had been subject to attacks for one year before being started on luminal. Had an average of 17 attacks per month same being about equally divided between the "grand-mal" and "petit-mal" types.

Chiefly nocturnal. Has been taking luminal four months and during this interval has had no attacks. Physically and mentally is very much improved.

Case 3. M. McQ., female, age 34. Attacks since the age of 16. All major attacks and the average number per month before luminal administration was 3. No seizures during the twelve and one-half months that she has been taking the drug.

Case 4. M. B., female, age 37. Began having convulsions at the age of 20. Has been in the institution for five years and, while there, has been subject to series of attacks of from four to ten each menstrual period. All attacks of the "grand-mal" type. Following each series of convulsions there would always be a period of marked mental disturbance which would last for about a week. For three months

Six months prior to administration.

Six months following administration.



Chart showing decrease in whole number of attacks in a series of fifty cases of "idiopathic" epilepsy, treated with luminal.

after being started on luminal she had no attacks. Then had two very light attacks at each of the two following menstrual periods. No attacks during the past four months. At no time since taking luminal has the patient experienced any of her usual periodic states of confusion and excitement.

Case 5. A. P., female, age 17. Attacks since the age of 2. During the past three years this patient had been having from 3 to 10 hard convulsions in the course of each twenty-four hours. The average number per month during a period of one year prior to taking luminal was 156. Her mentality was almost continuously clouded and she had deteriorated to the point where it was necessary to care for her as for an infant. Luminal has benefited this patient to the extent that she has gained twenty-four pounds in weight, is up and about the ward and is very much brighter. At present she spends a great deal of her time at drawing, in which she is very interested, and at which she has shown some talent. She now has an average of three attacks each week but, whereas formerly all her attacks were hard major epileptic convulsions, they are now all very light "petit-mal" attacks.

These are a few of the cases in which the results of luminal therapy have been most pronounced but from the list other cases could be cited in which the effects have been as striking.

In this series, however, there were ten cases, or twenty per cent. of the whole number, in which there was no appreciable change, either in the number or character of the convulsions. All other patients showed a decided change in this respect, either the convulsions becoming less frequent or the attacks becoming much lighter, or both. In some they disappeared entirely. In several cases, as in Case 5 above, the attacks were entirely changed from the "grand-mal" to the "petit-mal" type. All patients showed a decided improvement in mentality in that they became much brighter and the periodic mental disturbances and clouded states were fewer and of shorter duration or had entirely disappeared. Thus, in eighty per cent. of the cases of this series there has been an improvement and the entire triad of cardinal manifestation, i. e.; the convulsions, the clouded mental states, and the terminal dementia, has been beneficially affected.

What the ultimate results will be, time alone

will tell. Our experience with this drug has practically all been within the past year and this comparatively short experience does not permit of prognostication. However, the results so far obtained, merit a trial for this drug in established "idiopathic" cases of epilepsy.

CONCLUSIONS.

1. Before attempting treatment of any epileptic condition, an effort should be made to establish the disorder as being either symptomatic or "idiopathic." If it belongs in the former class the treatment should be specific; if in the latter class, the treatment is necessarily symptomatic.

2. In "idiopathic" cases the factor of constipation should receive attention. Treatment should be directed toward the three cardinal manifestations of the disorder, viz; convulsions, clouded mental states, and dementia.

3. For "status", paraldehyde is the drug of choice and should be given per rectum.

4. For the "cardinal triad", luminal therapy should be given a trial. In the writer's series of fifty cases, eighty per cent. responded well to this treatment.

1 Hare, H. A.; Epilepsy; Its Pathology and Treatment, F. A. Davis, Pub., Phil. and London; 1890

2 Small, V. R.; Treatment of the Epileptic Insane; Southern Medicine and Surgery, May, 1921.

3 Hoven, Henry; Bul. de la Soc. de Med. Ment. d Belgique, No. 171, 1913.

4 Grinker, Julius; Experiences with Luminal in Epilepsy; Journal Amer. Med. Ass'n., 75: 588, Aug. 28, 1920.

CONSTIPATION.*

By GEORGE P. HAMNER, M. D., Lynchburg, Va.

This *bete noire* of humanity is probably the most prevalent of all of the minor ills of mankind with which we have to deal in the present day. But in classing it with the minor ailments, it is not the intention of the writer to minimize its far-reaching and frequently grave consequences when neglected or when it becomes complicated with other diseases.

Constipation is a condition that may arise from many concurrent causes, and there are many and various forms of this disease, and I feel that it can be rightfully and legitimately classed as a disease. It may be that a spastic condition of the colon or both colon and lower ileum are the primary and sole cause in some cases, or stasis of both colon and ileum or colon alone, enteroptosis, coloptosis, or even a spastic contraction of the sphincter ani alone. In this

*Read before the meeting of South Piedmont Medical Society in Lynchburg, Va., April 19, 1921.

last condition, I have seen quick relief from a simple dilation of the rectum, either under ether or more gradually by some form of mechanical dilator.

Of course, there is always the possibility of a mechanical obstruction either from within or without the alimentary tract proper, growths, tumors, scars, contractures, adhesive bands and strictures that interfere with the rhythm of peristalsis or the passage of faecal matter. But after all of these causes are carefully weighed and considered, I feel safe in asserting that by far the great majority of cases of constipation have their origin in indiscretion in diet and careless habits. And, allow me to state at this point, that indiscretion in diet in this age is in a measure unavoidable. Now to speak of an unavoidable indiscretion sounds ambiguous but such is true when we take seriously into account the forms in which many of our food-stuffs are prepared and marketed. The chief one, for instance, that produced from grain, and commonly called the "staff of life," is rolled and pressed, and bolted until reduced to a mere starchy mass (bolted flour and meal), with nothing left in it to stimulate peristalsis and very little to nourish. Many other foods that tend to retard rather than stimulate peristalsis could be enumerated were the time taken to do so.

Again, all kinds of sweets and confections are produced and marketed in a greater variety of attractive forms and in much more abundance today than ever before in the history of the world. It has been long known that over-indulgence in sweets is conducive to constipation both within themselves and as a factor in largely inhibiting the appetite for more stable and nourishing foods.

All of these lead up to the principal cause of the vast majority of the cases of simple constipation, which is neglect. And carelessness or neglect is first superinduced by the lack of a call; or if a call, it is not sufficiently urgent to demand immediate response—a peristaltic action partially or wholly inhibited. The call becomes weaker and weaker day by day, and the patient, by neglect and the placing of some other duty first, for which an easy excuse is invented in this age of hurry and stress, soon finds that he has no desire to go to stool unless a purgative has been taken to whip up his sluggish bowels. Then, the purgative habit is formed and peristalsis lies down on the job

and waits for the purgative, with a complete picture of chronic constipation accompanied by a train of symptoms to which we have all listened long and patiently.

Still, there may be constipation (as Hurst sets forth) that is not necessarily a condition of infrequent defecation, but rather of insufficient defecation. In such cases, which are the exception rather than the rule, there may be as many as two actions a day and still there will remain behind sufficient toxic material to give all of the symptoms of constipation. This may be demonstrated by colonic flushing and bringing away this fecal matter which had not passed with the movements.

Now the vague and various symptoms which accompany cases of chronic constipation are too familiar to us all to merit reenumerating here, but it is imperative to be reminded that, if the condition is allowed to continue unrelieved, many of these symptoms become of a more or less permanent character and tend to invalidism, and especially to that form that none of us cares to encounter if it is possible to avoid, neurasthenia.

Now what are we going to do with a case of chronic constipation? Give it a purgative, or a laxative, if you wish to call it that, and let it go? Yes, if you want to lose that patient from your calling list, this is a good way to do it. But, if you want to retain your patient and incur about as much gratitude as one usually expects to receive upon a good result, you will have to do more than give a Rx.

The first point is to try to get at the real cause of the condition in this particular case, by a brief but comprehensive history, by stool examinations, and by the aid of the roentgenologist, who can often be of much value to you. You may not be able in every case to put your finger right on the cause but, if you can, you are that much to the good; if you cannot, why you have to proceed as best you can anyway.

When I find a case of simple though severe constipation and can satisfy myself that there is no mechanical obstruction, abnormal position or permanent stasis of the bowels, my first object is to impress the patient that I must have co-operation in the case, and that this is absolutely necessary to effect relief. I then tell him that I am going to discontinue drugs as soon as possible. This is to get the mind away from the necessity of laxatives. I then outline

a diet and demand that he follow it faithfully. The regime is something like this: Take a pint of Bedford Magnesia water, or a smaller quantity of French Lick, or any of the magnesia waters the first thing upon rising in the morning; then a turn in the fresh air before breakfast is always beneficial. If there is no impairment of digestion, the menu should consist of a liberal portion of cereal with sugar and cream or milk with any kind of fresh, tender meat, eggs in any form except fried, whole wheat bread, corn bread, corn muffins, graham bread, brown bread, or bran biscuit or muffins with a liberal portion of butter, also about two tablespoonfuls of strained honey, which is a fine laxative. Stewed fruits and a glass of fresh buttermilk may be added.

The noon or midday meal should consist of bouillon or meat broths with filler of rice, tapioca or farina; green vegetables boiled, salads with olive oil, and rhubarb. The latter is especially desirable for its laxative qualities.

Desserts should consist of fruits in considerable quantities, especially fresh fruits; figs, apples, melons, grapes, cherries, raisins, dates, honey, molasses, English walnuts and almonds.

Beverages should be plenty of pure water both at meal times and between and just before retiring, cream, buttermilk, lemonade, weak tea (the latter very sparingly), unfermented grape juice, new cider when obtainable, any of the good laxative or aperient waters.

When a laxative is necessary, my preference is one of the fluid preparations of cascara or a two to five per cent. senna paste to be taken at bedtime and only when absolutely necessary, and then with an explicit injunction that this is to be used only until a regular habit of going to stool at a certain hour daily can be established.

And on this habit I lay the greatest stress, directing the patient to select some convenient hour when other things are the least pressing, but preferably at some early morning hour, and establish a definite time to go to stool daily, never to fail to go just at this time whether he feels an inclination or not. He should go and sit for a few minutes. It is surprising how soon he will acquire a regular habit and can have a free regular bowel movement at this particular time daily and without the aid of laxatives. I endeavor to impress them most strongly that this is the most important part of the treatment, and that dis-

continuing drugs is the thing to be most desired in relieving constipation.

With the patient's full co-operation and some such method as is here outlined, it is most gratifying to note what can be done toward relieving this obstinate condition in many cases. Of course, when a regular habit is established, all laxative or aperient waters, as well as drugs, should be discontinued and only pure water used.

207 Wall Building.

PERFORATING ULCER OF THE LESSER CURVATURE, OBSTRUCTING ULCER AT THE PYLORUS, HYDROPS OF THE GALL BLADDER. REPORT OF CASE.

By J. RUSSELL VERBRYCKE, JR., M. D., F. A. C. P.,
Washington, D. C.

Miss E. B., aged 45, was seen with Dr. M. H. Price, June 22, 1920.

FAMILY HISTORY—Father living. Mother died a few weeks before with cancer of the uterus.

PAST HISTORY—Always fairly healthy. No serious illness. Just now having menopause.

PRESENT ILLNESS—Started one year ago; has been constant and progressive, being much worse for the last few weeks. Has lost about fifteen pounds in the last month. She complained of severe pain in the splenic region well under the ribs, not definitely affected by food. For several days had vomited continuously. Today the pain shifted to the right costal margin. Nausea, vomiting and pain were marked.

PHYSICAL EXAMINATION—Very pale, slight, under-nourished woman, weighing about 80 pounds. Tongue dry, thinly coated. Conjunctiva and skin pale with a subicteric tint. Heart sounds were rapid and weak but no murmurs. Pulse 120 and small. Abdomen was slightly distended but recti were extremely tense with almost perforative rigidity. There was intense tenderness over the whole of the left abdomen and well up over the intercostal spaces.

It was recognized that she was a very ill woman, with, however, nothing in the history or physical examination on which to make a diagnosis. She was sent to Sibley Hospital and the next day the test meal showed the stomach filled with changed coffee grounds blood with free HC1 30 and total acidity 62.

Hgb. 65%. R. B. C. 3,840,000, and leucocytes 10,000. Diagnosis was made of gastric ulcer with hemorrhage and peritoneal irritation from near perforation.

She was put on medical treatment for ulcer and responded at once. Vomiting never recurred and pain stopped after the second day. Occult blood disappeared in the early part of second week. She was discharged after the third week.

She remained fairly well for about six months, when she began to have acid stomach, sour belching about one-half hour after meals, which nauseated her and caused her to vomit. She stated that her pain was not as severe as before, but that sharp pains darted up into the chest. She became worse, so that by December 26, 1920, she was miserable with pain, and very weak. She could hardly make the trip to the X-ray laboratory. Dr. Christie reported that there was a barium filled sac in relation to the middle of the lesser curvature due to a perforated ulcer. There was also a deformity directly at the outlet, probably due to an ulcer there. At the end of six hours, there was a large gastric residue and the crater remained filled. Diagnosis was made of perforated ulcer of the lesser curvature and ulcer of the pylorus, producing high grade obstruction. Operation was advised.

I operated at Sibley Hospital the next day, December 17, 1920. At the pylorus was a very large, sclerotic and perhaps healed ulcer with scar tissue nearly completely blocking the opening. The gall bladder was very thin, distended, and filled with stones, with one square stone incarcerated in the mouth of the cystic duct. The gastro-hepatic omentum was hard to recognize as a distinct structure and there was a mass of adhesions and inflammatory tissue over a very large ulcer about the size of a half dollar, well up on the lesser curvature. It was extremely hard and there was a fibrous tongue extending from it, along the lesser curvature, distally, about one and a half inches long and about one-half inch wide. This had all the appearance of being a cancerous arm and the whole condition had a suggestion of malignancy. A loop of bowel was found adherent to the stomach almost as if a gastro-enterostomy had been done. This was easily separated.

It was a puzzling question to decide what to

do in the presence of so much pathology. Her condition was so precarious, due to anemia and starvation, that there was some doubt whether she would survive any operation and an attempted partial gastrectomy would have surely proved fatal, so, after consultation with Dr. Reichelderfer, who assisted me and Dr. Price, it was decided to do a preliminary gastro-jejunosomy, high toward the cardia, as the first step to a partial gastrectomy later, if she survived and got stronger. This was done and, while finishing the operation, the stomach filled with fluid which I then thought was hypersecretion of gastric juice, but which turned out to be, at least in part, a hemorrhage from the extensive handling of the large ulcer, as that evening she vomited two pus basins full of dark bloody fluid.

Post-operative treatment consisted in placing her in a semi-recumbent position as soon as she reacted, withholding all nourishment by mouth for three days and feeding by Murphy drip with 10% glucose solution containing soda, continuously from the time she reacted, only stopping it for a couple of hours when necessary. She took it beautifully and only vomited small amounts of bile twice the second day. The convalescence was almost spectacular so that on the third day she looked better than before the operation. Beginning the fourth day, she was started on regular medical treatment for ulcer with modified milk every hour and alkali 15 minutes after each feeding.

January 4, 1921, eighteen days after the first operation, her condition was so good that it was decided to complete the operation. The abdomen was opened through the same incision, which was well healed. There were a good many adhesions to the anterior abdominal wall, resulting from the extensive handling at the first operation. These were separated and the gastro-enterostomy found to be in perfect condition and with no adhesions about it.

Our surprise was unbounded when we saw the change which had taken place. The large ulcer with its covering of inflammatory tissue had disappeared to such an extent that it took some minutes to find it. All hardness had gone and the crater was very small. The fibrous arm along the lesser curvature had completely disappeared. Thus, all thought of its being cancer was eliminated and the ulcer

was so near well that it was thought best simply to infold the remnant. After this was done, the gall bladder was easily removed.

On examination after removal, the gall bladder was found functionless, containing clear mucus, only faintly bile tinged, and twenty-four fairly large stones. The one obstructing the beginning of the cystic duct was impacted in a little diverticulum and had evidently been there many months, as the tissue was molded about it in exact form.

After the second operation she vomited three times, had no gas and practically no pain, made a speedy recovery without any mishaps and was discharged from the hospital on the fourteenth day. She has improved steadily to date and will, I hope, have perfect health. There is, of course, some slight chance that in after months she may develop an hour-glass stomach, because of the extent of the lesion.

This case is reported for: (1) The rarity of three such marked organic lesions in one individual at the same time; (2) the fact that extreme gall bladder disease would have existed without giving any symptoms; (3) because the amount of improvement following gastro-enterostomy was so remarkable, when as a rule the operation is unavailing for ulcer of the lesser curvature. It was done solely to relieve the obstructive ulcer; (4) to illustrate the value of combined medical and surgical treatment in such cases. The medical treatment following the first operation was as strict as if operation had not been done; (5) to advocate a two stage operation where cancer is present and the condition of the patient very grave, as in this case.

ACUTE OSTEOMYELITIS.

By JAS. W. GIBBON, M. D., Charlotte, N. C.

This disease depends for its location and character upon the fact that bone is a rigid and peculiar structure composed of a hard, sparsely vascularized cortex, and a soft highly vascular core or medulla, and a circumferential vascular covering, the periosteum. All bones contain these three structures, though varying in the proportions of each. If one saws through a bone, the outer layers are found compact, while the medulla is found to be composed of an interlacing of thin spikes and spicules having attachment to the cortex.

The difference between these two portions is pronounced—the cortex being composed almost entirely of solid matter, while the medulla contains large spaces between the spicules, in which there are fat, marrow cells, thin-walled blood vessels, and a considerable amount of blood. In the long bones—the humerus, the femur and the tibia—there is a definite medullary cavity. In the flat bones it is often difficult to say where the medulla begins or where it ends—the change from the cortex to the medulla being here much more gradual. The medullary cavity contains the true medullary tissue—fat, lymphoid cells, and haemoblastic centers.

On breaking a long bone transversely, one is able to see that even the densest part is pierced by tiny canals, each containing a blood vessel, and the larger ones containing lymphoid tissue. These canals are smallest in diameter directly beneath the periosteum, where they are about 1/1000 of an inch in diameter and, as one progresses toward the medulla, they gradually increase in diameter until at the place where the cortex merges with the medulla they are about 1/200 of an inch in diameter. In the medulla itself, they attain a very much greater size. These are the Haversian canals. Each Haversian canal is surrounded by a series of concentric columns of bone, which columns are divided one from the other by concentric rings of single thread-like processes which communicate from one cell to the other, and with the central tube of the Haversian canal. These are called lacunae, and their thread-like processes, canaliculi. The concentric layers of bone which are really fused into one column and the adjoining columns which are fused together, making a continuous plate, are called lamellae. Between the lamellae and between the concentric groups of lamellae, one finds here and there irregular spaces which are evidently the result of the absorption of hard bone. These spaces are called Haversian spaces.

Hence, it will be seen from this survey of the structure of bone that neither the cortex nor the medulla should be considered a crystallized or an inanimate substance. As a matter of fact, the true nature of bone may be best conceived as a "deposit of organized mineral salt between the spaces of a finely branched system of blood vessels." Lymphatics also probably exist.

The periosteum is a coarse fibrous membrane which invests the bone, and it also is very vascular. Blood vessels in the periosteum have some muscle tissue in the walls, but the vessels which enter the bone are devoid of muscle, only with the exception of the nutrient artery. The blood supply of the bone comes also from the nutrient artery which generally enters the medulla by a hole running obliquely through the cortex, and in the long bones the artery usually enters near the middle of the shaft. The foramina seen at the ends of bones are for the emission of veins. There are two main nutrient arteries for the femur.

THE COURSE OF BLOOD THROUGH A BONE.

There seem to be at least two well defined views in regard to the actual course of blood through a bone; but, however different these may be, both recognize the same essential factor altering the circulation of the blood as it passes through the bone, namely, that of stasis. Arterial blood enters by two routes. First, and chiefly, by the nutrient artery, which, on reaching the medulla, sends blood both up and down the bone, rapidly dividing into an arborization, the branches of which are short and empty quickly into large venous spaces. The second route is by the periosteal vessels, which arborizing in the periosteum, capillary vessels conduct the blood through the Haversian canals into the medulla. The blood in these capillary vessels is said to become at once venous, the blood issuing from the cut surface of a bone being always venous unless the nutrient artery is cut. For these anatomical reasons blood entering the bony circulatory system loses much of its impulse and becomes static. The entrance of blood into a bone has been compared to the entrance of a stream of water into a tank (Oschner).

Stewart believes that in the ends of the long bones, the areas of greatest growth and consequently the areas of greatest vascularity, the final branches of the nutrient artery arrange themselves in terminal loops, similarly resulting in a retardation and stasis of the current.

INFECTION.

Organisms entering into this system of unique circulation find their best opportunity to rest and be deposited. The point of deposit of the bacteria may be either directly beneath the periosteum, because of the previously mentioned arborization of the vessels in this membrane; or in the medulla at a point where

the branches of the nutrient artery enter a blood space; or, according to Dr. Stewart, in the ends of the medullary cavity where the vessels have arranged themselves in terminal loops—in each case, points of blood stagnation.

With the stasis of the blood, the bacteria settle and begin to multiply, undisturbed by the coursing blood current. In this way bacteria, which in small numbers are not virile enough to originate trouble in more active tissues, gradually accumulate and multiply, and finally are enabled to set up an infectious process. From this little focus, toxins and bacteria disseminate, reproducing and extending the process to other areas.

The favorite sites for osteomyelitis correspond then to points of maximum growth, maximum vascularity and maximum stasis, namely, in the shafts of long bones on the diaphyseal side of the epiphyseal cartilage, or at the cortex of the bone, directly beneath the periosteum, infection of the medullary cavity occurring from extension through the Haversian canals.

Infection then is usually haematogenous in origin; the bacteria entering the blood stream from some distant focus, the teeth, the tonsils, or gastro-intestinal tract, are swept away and come to rest in the bone. However, neither the occurrence of acute osteomyelitis nor its pathology is so accurately and aptly defined with such positiveness, for there are other elements of more obscure nature which play an important, though possibly secondary, part in the development of this disease. Reasoning alone from the facts in the circulatory and structural peculiarities of bone, the question might be well raised why all cases of septicaemia and bacteriaemia do not ultimately develop osteomyelitis. Such contention is answered by authors in different ways. Some introduce and emphasize a secondary factor, as a temporary chilling or a trivial trauma to the bone, producing a point of lowered resistance. Others believe it entirely a question of immunity, natural or acquired, of the tissues of the patient to the infecting organism.

Dr. Cotton, of Boston, from his experience adds a few cases in which the osteomyelitis was the result of a local sepsis in the limb lower down, a lymphatic transfer; and also direct invasion of the bone from infection in the contiguous soft parts, most often seen in infections of the hands.

BACTERIA.

Almost any bacterium may be seen in acute osteomyelitis, but by far the most frequent are in order, the staphylococcus aureus, streptococcus, typhoid bacillus, pneumococcus, colon bacillus, and diphtheria bacillus.

INCIDENCE.

Acute osteomyelitis occurs most frequently in the adolescent boy. In a series of 104 cases reviewed at the Copenhagen Hospital, there were three times as many boys as girls affected, and the bones are affected in the following order: femur, 39; tibia, 31; humerus, 9; fibula, 7; radius, 4; and ulna, 3. It is interesting to note that the femur was the most frequently affected, and that it has more nutrient arteries entering into it than any other bone. Long bones are affected more frequently than the flat, though Dr. T. McCrae states that typhoid osteomyelitis is more common in the ribs and costal cartillages. Another interesting feature is the rarity of acute osteomyelitis in the vertebra where tuberculosis is so common. In this connection, Ochsner believes there are many cases of the disease in this region incorrectly diagnosed until spinal meningitis occurs and proves fatal.

Acute osteomyelitis often follows certain of the exanthemata, typhoid, pneumonia, scarlet fever, or a hidden focus somewhere in the body.

PATHOLOGY.

Once infection is implanted in the bone, reaction of the parts is usually prompt. If in the medulla, there is first hyperaemia and congestion from vascular distention, later there is a thrombosis of many of the vessels, rapid leucocytic infiltration, and accumulation of fibrin. This is followed by a coagulation necrosis, and a liquefaction of the intercellular substance, destruction of the tissue, and the final production of pus. The periosteum is at first hyperaemic, later edematous, thickened and rubbery over the infected focus in the bone. Suppuration may occur first beneath the periosteum with secondary infection of the medulla by invasion through the Haversian canals. In the medulla there may be two or three foci developed which do not communicate. Inflammation and suppuration compressed within the rigid osseous walls cause great pain and tenderness in the affected area. Because of this inflammatory pressure the vio-

lence of the destruction and the rapidity of the process is greatly enhanced. Following the lines of least resistance the pus may burrow through the entire length of the medullary cavity. But what is probably the most frequent, it bores through the Haversian canals, and collects beneath the periosteum, lifting up and separating this membrane from the bone, which may occur over a wide area if the periosteum is not ruptured. When the periosteum ruptures, suppuration spreads through the superficial tissues. These become edematous, the limb greatly swollen, and numerous blisters or blebs containing a dirty yellow serum may be formed over the skin surface.

Abscess in the bone is said to be present twenty-four hours after the onset of the symptoms.

SEQUESTRATION.

Destruction then of bone is a large factor in the course of this disease. Blood vessels are thrombosed, the endosteum and periosteum are separated from the bone, and consequently all sources of nourishment taken away, it dies and is separated from the living by the osteoclasts, forming the sequestrum. This process takes place both within and from without the cortex, but the destruction of the delicate medullary bone because of its less compactness is much the more rapid. If undisturbed, the whole shaft of the bone may be destroyed and separated as a sequestrum.

REPAIR.

If the patient survives long enough the septicaemia, and the process in the bone localizes, ultimately there is bone formation going hand in hand with the bone destruction. This new bone formation takes place from the medulla and the periosteum, forming the involucrum which surrounds the dead bone.

The involucrum formed by the periosteum may be very imperfect and of poor quality, and is frequently honeycombed with holes and spaces from which pus escapes from the neighborhood of the sequestrum. Though there may be only one hole through the involucrum, it may be so riddled as to resemble imperfect lattice work. The new bone formed from the medullary region is more homogeneous and of better quality than the periosteal, and it seems that the chief efforts of the core are directed towards the removal and destruction of the sequestra and bacteria, while the efforts

of the circumferential tissues seem to be directed toward the reproduction of supporting bone. At this stage, though, the pathology of acute osteomyelitis has merged into that of chronic, which is not the purpose of this paper to discuss.

EPIPHYSITIS.

The epiphysis is involved in 12 and 15 per cent. of the cases between the second and seventh day (Ochsner). But as a general rule acute osteomyelitis is limited to the diaphysis, the epiphyseal cartilage acting as a block to the extension of the suppuration into the neighborhood joint. Also, the very close adherence of the periosteum at the epiphyseal line checks the extension of the subperiosteal pus toward the joint. This is in contra-distinction to tuberculosis which begins in the epiphysis and easily involves the joint.

ARTHRITIS.

The joints as a general rule are not involved. However, certain normal anatomical features make exceptions to this rule. The capsule of the hip joint is very commonly attached beyond the epiphyseal cartilage to the diaphysis; hence, part of the diaphysis is within the joint, and involvement of the diaphysis with acute osteomyelitis, is very apt to involve the joint. For this reason, the disease in the upper end of the femur may be more disastrous than at other points.

Joints proximal to the acute infection in the bone do commonly, however, show distention, increased heat and tenderness. This is not due to an involvement of the joint, but due to either a protective or a sympathetic outpouring of lymph from the synovial surfaces into the joint, and hence the fluid in these joints is not infected.

DIAGNOSIS.

Early recognition is the first great essential in any consideration of this disease. By early recognition is meant, not after pus has burrowed through the greater part of the medullary canal, not after it has broken through the shaft of the bone and collected beneath the periosteum, nor after it has perforated this membrane and infiltrated the soft parts, causing a greatly swollen, red, edematous extremity, but within the first twelve to twenty-four hours, even before suppuration has occurred. Naturally, it is in these early cases

that this is most difficult, and the diagnosis must resolve itself into one of elimination of the other maladies which may simulate acute osteomyelitis, aided by a very careful examination of the extremity.

The history may be of a trivial injury to the part, or an exposure to cold or wet, a sudden onset with pain in the extremity, a chill, fever 102° or 103° , and great prostration. Of the physical signs at this early period, perhaps the one of greatest weight is an exquisite tenderness localized over the shaft of the bone and as a rule in the neighborhood of a joint. This is gotten by carefully palpating with one or two fingers bit by bit each area of the surface of the bone from one end to the other. At the point where the tenderness is most extreme is where the focus of the infection lies, and not the area to which the pain is referred, for this may be very misleading. Pain sometimes in infection of the upper end of the femur is referred down about the knee, sometimes the pain will be referred to the joint in the region, and again it may be diffuse. The only rule that we can depend on for locating the point of infection in the bone is this absolutely localized and extreme tenderness. This is most frequently in the diaphysis near the epiphyseal cartilage.

The adjacent joint will very commonly be distended with fluid, and also hot, red, tender and painful. This fact may be very confusing and add a good deal of difficulty to the diagnosis in this early stage, but, as remarked by Stewart, the diagnosis "is most frequently not made because of an incomplete and careless examination."

Acute osteomyelitis, especially when there is effusion in and heat and redness about the contiguous joint, must be differentiated from acute rheumatic fever. Rheumatic fever, as a rule, affects several joints, "a single synovitis argues against rheumatic fever" (Ochsner), and Sir William Osler remarks that rheumatic fever "is seldom limited to one articulation." The greatest tenderness in osteomyelitis is extra-articular, either above or below the joint, while in rheumatic fever the point of the extreme tenderness is neither above nor below, but in the joint itself. Sometimes the joint contiguous to acute osteomyelitis can be moved painlessly, but this is rare. Tapping over the bone at a point farthest from the joint may cause pain in the bone in acute osteomyelitis.

while in the acute rheumatic joint such tapping may be painless unless the joint is moved. Medical men further tell us that in the young child the joint symptoms of rheumatic fever may be very mild and not pronounced, but the discovery of an endocarditis suggests the diagnosis. (Osler and McCrae.) Therefore, in distinguishing between these two diseases, examination of the heart may be of some aid in reaching a conclusion. It cannot be denied, however, that, in the early cases when there is a considerable degree of intra- and extra-articular reaction of the joint adjacent to the infection in the bone, the difficulty in diagnosis is largely complicated.

Acute arthritis deformans occurring in young children may be difficult to differentiate from acute osteomyelitis. Commonly the arthritis is multiple, and involves the smaller phalangeal articulations, the prostration is not so sudden, the temperature not so high, and the joints not so tense.

Infantile paralysis in the early stages may resemble acute osteomyelitis. In this differentiation, the rigidity of the neck in the former is a very important point in the determination, and when two limbs are involved osteomyelitis may be ruled out.

Infantile scurvy may be readily recognized, because it affects many bones, the patient has swollen and bleeding gums, and the temperature perhaps is normal.

Tuberculous arthritis or osteomyelitis starts in the epiphysis, the onset is slow, and the constitutional symptoms much less severe.

In some cases of acute arthritis in infants especially with involvement of the hips and knees, there is associated a gonorrheal ophthalmia or vaginitis.

All of these conditions may be excluded by the exact localization of the process outside of the joint. The X-ray is of little or no value in the diagnosis of the early acute stage of osteomyelitis except in a negative way by ruling out other possibilities.

TREATMENT.

Acute osteomyelitis constitutes a surgical emergency. Drainage of the medullary cavity should be performed as soon after the diagnosis as possible. Any delay or procrastination in carrying out this procedure immediately increases the extent of the destruction and necrosis of the bone, adds to the gravity of the

operation, and seriously endangers the life of the patient from pyemia and sepsis. Virulent infection and inflammatory reactions compressed within the rigid walls of the compact bone in the violence of their progress follow the lines of least resistance, and this is usually up the medullary cavity until the cortex is broken through, the periosteum is perforated, and drainage is accomplished by nature. Pus may burrow through the entire medulla, and the greater part of the shaft be destroyed if drainage is not obtained to relieve the inflammatory tension from the inside. Years ago, surgeons advised waiting for the formation of the sequestrum, but no such rule is followed today. There is no other condition which demands more immediate surgical intervention. Operation, then, should follow close upon the diagnosis.

OPERATION.

An incision is made over the point of maximum tenderness through the skin and soft parts down to the periosteum. In very early cases, the periosteum overlying the involved region is thickened and edematous and not separated from the shaft beneath. If, on the other hand, suppuration has occurred, and a subperiosteal abscess is present, this membrane will be found lifted up and separated from the bone by the pus beneath. In the past, mistakes have been made when pus was found beneath the periosteum because the surgeon incised the periosteum, evacuated the abscess, and did not open the bone.

In considering the pathology and treatment of acute osteomyelitis, Colvin remarks that unless we think of periostitis as really a part of an osteitis we are liable to err in our treatment. Periostitis is not an independent condition and opening the bone is essential. There is nothing difficult or hazardous about opening the bone. Joint complications, necrosis with its long and complex pathology, will be less common if the opening in the bone is extensive enough for adequate drainage. Lejars and LeConte agree that it is never expedient to incise the periosteum only—but that in all cases of periostitis in the adolescent, it is wise to expose the medulla. If no medullary pus is found, little harm has been accomplished, while if a medullary focus has been neglected great harm may follow. Therefore in all cases, when there is or is not pus beneath the peri-

osteum, the medullary cavity should be opened.

If the periosteum is not separated from the bone, this is done with a sharp, thin-bladed chisel, using care and gentleness. Rough treatment is to be avoided, as it is said there is danger of leaving the osteogenetic elements of the periosteum attached to the bone, and the periosteum would thus be incapable of producing new bone. The periosteum then is longitudinally incised and separated from the cortex and with a drill or trephine the medulla is opened. In the very early stages no pus may be found, but the marrow will be inflamed and edematous looking. The focus having been found, a large slab of the cortex is removed, the marrow of the exposed area curetted away, and the walls of the cavity chiseled down until the cavity is reduced to the shape of a saucer or trough. Enough of the cortex should be removed in all directions from the focus to be certain that no secondary focus remains undrained. The cavity may then be swabbed out with 5 per cent. carbolic acid, ether, alcohol (95 per cent.), or iodine, and packed with iodoform or plain gauze, to prevent the accumulation of a blood clot after the patient has reacted. The presence of blood clots is said to lead to continued suppuration. The wound is left wide open and the extremity immobilized. At the end of two or three days, the gauze packing is removed—or sooner if the temperature does not fall on the day following the operation—the wound is washed with salt solution and the dressings changed daily from then until entirely healed.

This applies to the cases in which the diagnosis is made early and are promptly operated upon. In the cases which do not reach the surgeon until late, when pus has largely filled the medullary cavity, or broken through the cortex, bored its way beneath and separated the periosteum from the bone over a wide area and suppuration has spread through the soft parts, the story then is obviously a very different one. The operation must be much more extensive, almost mutilating in its attempt to save the limb, and prevent death from sepsis. In these late cases the medullary cavity must be opened widely, the bone guttered and the marrow removed with the curette as far as the pus extends, even though this necessitates the opening of the entire medulla. It may be necessary to make counter drains through the

soft parts, as pus pockets may have formed in these. The wound is then packed with gauze, which is removed in twelve hours. Then Dakin's tubes are placed through the wound, and sterilization by the Carrel-Dakin method begun, and continued until suppuration has been controlled. Joint involvement, loss of a large part or all of the shaft of the bone, destruction of the epiphyseal cartilage, prolonged sepsis, and a delayed and tedious convalescence are the sequels of many of the late cases.

CONCLUSIONS.

Bone is a highly specialized tissue. Its vascular plan renders it peculiarly susceptible to pyogenic infection of a great and destructive rapidity.

The infection is commonly in the diaphysis, affecting the epiphysis in only 12 to 15 per cent., rarely invading the joint.

On the early diagnosis rests the most satisfactory form of treatment for this disease. The differential diagnosis can usually be made when careful and complete examinations are made.

Immediate surgical treatment must be followed if great destruction and necrosis of bone, prolonged sepsis, and a delayed and exhaustive convalescence are to be avoided. The treatment is competent drainage of the medullary canal.

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ACUTE MASTOIDITIS.

By JAMES ERWIN DIEHL, M. D., Norfolk, Va.

I shall not attempt to go into a lengthy detail upon this subject, but will attempt to confine my paper to what I consider essential features encountered in my personal experience and those obtained from reviewing the literature upon this subject.

As my experience increases in mastoid conditions, the less inclined I am to lay too much

stress upon any few signs as an index to the pathological condition present and the influence upon the course of treatment. I think up to recently there has been too much stress laid upon certain symptoms which were thought by older writers to be pathognomonic of mastoid involvement. The older writers upon this subject emphasized the importance of pain over the mastoid bone upon pressure. This is not a reliable criterion in many instances as to the underlying condition, for we all know that cases of a mild or severe inflammatory condition deep seated in the mastoid cells of a thick skull will not give as much pain upon pressure as a superficial mild inflammation in a thin skull. This I have observed upon the operating table.

In certain nervous conditions we often find what is termed physiological tenderness of mastoid process, seen in hysterical and neurasthenic individuals. The symptom of pain has been so impressed upon the medical profession by the earlier writers, that it is sometimes difficult for the otologist to convince the family physician that some of the most serious cases are those in which pain is slight or at times absent. In such cases, the infection is apt to be a virulent one.

Sagging of posterior superior wall of the canal close to the tympanic membrane is diagnostic of destruction of mastoid cells between antrum and meatus. Some operators advise a mastoidectomy when this condition is present, provided that a myringotomy had been done a few days before without any improvement in the clinical findings. The white cell and a differential count in addition to the X-ray would be valuable assistance.

Dr. Dixon, of New York, has done a great deal of work on the mastoid bones. He has been able to compare the two mastoid bones, determine the location of the lateral sinus, character of the mastoid bone, whether pneumatic or infantile; in some cases he has been able to diagnose perisinous abscess and, by repeated examinations, the progress of the disease has been observed, whether resolving and clearing up or advancing as indicated by increasing cloudiness. In conclusion, he says it is not to be understood that the form of infection or a positive X-ray finding alone can be relied upon to any extent as to determining the need of operation. Dr. Dixon has reported 6,000 cases of microscopic smear examinations

from the ear, with the following showings: 26 per cent. mixed infection, 25 per cent. streptococcus, 13 per cent. pneumococcus, 7 per cent. staphylococcus, 5 per cent. streptococcus mucositis casapatis, and 30 per cent. bacillus pyocyaneus, diphtheria, tubercule, coli communis bacillus.

It has been my experience that the virulent organism found in the discharge has not given me any more trouble than when I found less virulent organism. I do not believe we can definitely determine the organism that is the prime factor in producing the disease, although we have presumptive evidence when we find but one organism in the discharge, and we are led to believe this particular organism is the cause of the trouble. I have heard otologists of wide experience say that they often were unable to grow the same organism from pus taken from the mastoid cells. I find it best not to lay too much stress upon the organisms found in the discharge, as, mentioned before, the most innocent organisms may cause a very troublesome mastoid and, on the other hand, the most virulent organism may give little trouble.

In a clipping taken from the *Journal of the A. M. A.*, concerning the streptococcus mucositis capsulatis as a cause of mastoid disease, Graham Bacon states that, according to his experience, the streptococcus mucositis capsulatis is the most destructive germ with which the otologist has to contend, and the question of an operation when the mastoid cells are involved is a most important one. He cites a number of cases which serve to emphasize the following points: 1. The patient may have very severe pain, or the pain may be slight, and the temperature is seldom much above normal. 2. The discharge in some cases is very profuse, while in others it is slight, and there may or may not be sagging of posterior and superior canal wall. 3. The X-ray is a most valuable aid, as the cells on the affected side will be cloudy and in some instances it is possible to detect an epidural or perisinous abscess. 4. We should err on the safe side and operate when in doubt, for we often find a great destruction of bone, even in cases that present few symptoms. It is only in a few cases that yield readily to treatment that an operation can be avoided.

Temperature has very little value. In acute cases it usually ranges between 100° and 103°. In chronic middle ear cases with later mastoid

involvement, it is not infrequent to find the temperature normal.

Oedema behind the auricle is more characteristic of circumscribed inflammation of the auditory canal than a mastoid involvement, or it may be due to pus that has perforated the cerebral cortex, thus causing subdural abscess. This latter condition is more frequent in infants and young children.

Conclusions: In order to give the patient the advantage of all scientific medical knowledge, and also as being indispensable to the surgeon, we must rely upon the laboratory and X-ray findings in conjunction with other evidence at hand. Personally, I frankly admit that I do not believe in tinkering with a mastoid after we have all the evidence strongly pointing to a frank mastoiditis. I believe at this stage the surgeon should operate and not wait longer in hope that nature will bring about a cure. We know that, by exenterating the mastoid cells and thereby giving free drainage through the open wound and also by the way of external auditory canal, the condition usually clears up in a few weeks. By following this procedure, we may prevent a long-drawn-out condition, lessen the liability of a chronic middle ear disease, preserve the hearing, and not subject the patient to an infection that may impair his health and lower his resistance, and, after procrastinating for days, weeks, and sometimes longer, have him come to the operating room. On the other hand, it would be interesting to know what would happen to those cases that we operated upon, if left to go unoperated. I personally believe it better to err on the safe side and operate.

337 Monroe Building.

HYSTERICAL AMBLYOPIA. — REPORT OF CASE.*

By COURTNEY EDMOND, M. D., Clifton Forge, Va.

Mr. X, aged 41, railway brakeman; married; two children living, healthy; boy twins still-born. Has had measles, influenza and diphtheria, but generally healthy and physically strong. No venereal history; uses tobacco in moderation; drank heavily about fourteen years ago. Six years ago was struck on head with blackjack which rendered him unconscious for five days. To this injury he

attributes his present trouble, which he claims must have started about four years ago when he noted the wax ceased forming in his ears and that he has had none since. He was not convinced of visual disturbance, however, until two years later when he had difficulty in shifting his train. Since then he has felt an increasing uneasiness while in the discharge of his duties.

Patient about six feet tall, weighing 170 pounds, muscular type. There is depression in outer table of skull two inches long by half-inch wide, midway between top of left ear and median line posteriorly, where struck with blackjack.

Vision O. D. 20/100; O. S. fingers at 4 feet. Pupils small, round, equal, reacting sluggishly to light; convergence and accommodation normal; muscle balance normal for distance and near; reads plus two print, with right eye only, at 19 cm.; refraction, homatropine, plus one-half-diopt-sph., retinoscopy; no nystagmus, but patient states cannot control his eyes, which is evident upon ophthalmoscopic examination.

Fields, from periphery to center, concentrically contracted—tubular vision—left eye represented by circle on ten degree line; right eye less circular and larger extending to 20 degrees templeward. Moving perimeter distant one meter produces no enlargement of field of either eye. Fundus both eyes somewhat cloudy with opacities of vitreous, more marked in left, obscuring disc margins somewhat, otherwise negative.

The dyschromatopsia is interesting. Patient in practical sense is achromatoptic, possessing perception for red only, and this in doubtful manner. Can quite correctly name the primary colors if held 20 cm. from right eye, or at point thirty feet distant. At other distances can perceive only bright red and this color doubtfully. Yellow is called "a dirty white" almost invariably, no matter what the distance, but if blue is brought in contact with the yellow, after deliberation and facial contortions, both are named correctly, although still preferring to call yellow "a dirty white." In like manner, patient will name green if red is brought in approximation, the reply being somewhat in the nature of a guess. From this we get the inference that the antagonistic colors reciprocally assist in the recognition of each. Violet or blue, regarded the same by

*Read at a meeting of the Alleghany County Medical Society.

patient, was first color-perception to disintegrate. As green perception is lost, bright-red retained, and yellow called "a dirty white," possibly meaning its disintegration, one might recall Pitre's arrangement of the order in which colors are lost, namely: "Violet, green, blue, yellow and red."

Patient has monocular diplopia and polyopia. Candle-flame at twenty feet is seen as two flames by right eye (left eye covered), the flame having reddish tinge. Upon being brought nearer, the two flames get closer until at four feet they become one. Curiously, from this point toward the eye, while having the correct tint, the flame becomes smaller, not corresponding to size of retinal image. Cannot see flame at twenty feet with left eye, although with Stevens' phorometer the muscle-balance was obtained, patient seeing the two lights. During these tests he exclaimed that at times he saw two, three or half dozen objects when but one existed. He further stated he could see best between noon and 4 o'clock in afternoon—that early or late he cannot tell a white from a black man 200 feet away, and that at night he is helpless with his lantern. Diminished light sense. Test-card of Snellen is described as "wedge-shaped," bigger at top. The test-object one-centimeter square used in perimetry, if shown and promptly re-shown, is thought of different size, particularly if exhibited at varying distances; Parinaud's Micromegalopsia.

There are visual hallucinations, as railway locomotives and box-cars are seen at times when none exist, and "sink-holes and bumps" are observed in his pathway when there are none, which suggests the psychic or cortical nature of the disturbance.

He claims to have pain in groin which radiates to testicle. States his co-workers have repeatedly stigmatized him as being blind. This he resented until a series of personal accidents convinced him he was no longer suited to the hazards of railway employment. On one occasion, mistaking footing, he fell through a trestle.

There is slight deafness, bone conduction being diminished according to the Schwabach test, more on left side. No cerumen in either canal. Tympanic membranes of normal appearance.

Conjunctiva and cornea anesthetic, both eyes, save possibly centers of latter, patient stating

he "blinks," not because he feels but because he sees the test-object, the so-called "retinal-lid-closure reflex." Lachrymal reflex intact.

Prince states that the "Hysterically blind see but their visual sensations are not in connection with their dominating waking consciousness." Surely, this patient's orientation must have been remarkably perfect during his four years' experience as railway brakeman. Parinaud claims that, in these cases, "visual impressions, although unperceived, bring about in the muscular apparatus those instinctive and unconscious movements by means of which we find our way through the external world." Patient voluntarily states that his vision is better while moving about.

His demeanor is worthy of comment. Upon entering the office, he at once seeks recumbent, or semi-recumbent, position, selecting lounge or group of chairs, not hesitating to rest head or to elevate feet upon any adjacent article of furniture. His manner is that of weariness. His gait is uncertain, having curious difficulty in use of right leg and foot, which he awkwardly assists with hands in climbing steps. There is a constant numb or "sleepy" sensation in this leg.

NEUROLOGICAL: Biceps reflex negative; absent right abdominals and right cremasterics; gluteal reflexes unchanged; patellars slightly increased; absent Oppenheim, Gordon and Babinski; no adiadokokinesis; no motor changes in extremities; loss of tactile and thermal sensation in calf of right leg in which cutaneous anesthesia is so often noted in conjunction with tubular fields and insensibility of the conjunctiva and cornea in this neurosis.

LUMBAR PUNCTURE: No increase in pressure; fluid clear; negative cell count and globulin test; negative Wassermann.

White blood cells 11,000; negative blood Wassermann. Urinalysis negative.

Patient first consulted me a year ago. Condition unchanged.

THE IMPORTANCE OF EARLY REGOGNITION AND TREATMENT OF PROSTATIC HYPERTROPHY.

By W. C. STIRLING, JR., M. D., Winston-Salem, N. C.
Urologist, Lawrence Clinic.

The general practitioner comes in contact with all types of disease and ailments, but probably one of the commonest is one he

knows the least about. This condition is prostatic hypertrophy characterized by hyperplasia and median lobe enlargement. We are all familiar, in a general way, with the symptoms of this condition as we are coming in daily contact with these old men seeking relief for their trouble. There is not a village or town in the state which does not furnish its quota of these patients.

When one of these old men comes to us complaining of nocturnal frequency of urination, dribbling, and difficulty in starting his stream, together with other symptoms associated with prostate obstruction, we are too prone to lightly dismiss him without making a careful examination, instructing him to take a urinary antiseptic and regulate his diet. As this does not improve his condition, he makes the rounds of his local physicians, without any marked improvement. Palliative treatment having failed to give him relief, his friends advise him to drink various mineral waters which he faithfully proceeds to do, only to be again disappointed. He soon begins to realize his general condition is becoming worse, by losing sleep, due to the nocturnal frequency, and a gradual increase of residual urine. This brings about secondary changes in the kidneys, due to back pressure. Associated with the urinary symptoms are gastro-intestinal disturbances which derange the digestive apparatus. This condition has a tendency to undermine an already weakened constitution. The residual urine increases in amount until there is very frequently an overflow retention, which keeps the patient's clothes saturated with decomposed urine. This train of symptoms is very prone to cause disturbances of the mind due to the uroseptic state and the patient's condition becomes pitiful indeed. It is a reflection on the general practitioner to permit these old men to pass into a state of uremia or nrosepsis without advising surgical interference.

When one of these old men comes in for the relief of their symptoms as described above, a careful history should be taken as this alone will usually reveal the condition. A very thorough examination should then be made, the presence or absence of residual urine determined and, if present, the amount, by having him empty his bladder and then passing a catheter and measuring the amount with-

drawn. Also, the presence of infection and extent should be determined if possible. If the amount of residual urine is sixty c.c. or over, we know there is obstruction of the bladder outlet and that further palliative measures are useless. This condition steadily becomes worse, the residual urine gradually increasing, due to the adenomatous growth. Since we can so easily diagnose these symptoms, why do we prescribe palliative measures when we know at best the condition will not improve? Surgical interference alone will benefit these patients, as the prolonged use of a catheter will inevitably lead to infection followed by sepsis and death, no matter how carefully the catheterization is done. These cases are poor surgical risks, and it therefore behooves us as physicians to intelligently advise them in the beginning as to the ultimate outcome and the necessity for early removal of the obstruction before they become uremic.

Since the condition is essentially a surgical one, requiring the services of a trained urologist to handle it, it is the duty of the general practitioner to refer these cases to the urologist, as much so as it is to refer eye conditions to the oculist. General practitioners do not care to assume the responsibility of treating serious eye diseases, yet they do not hesitate to prescribe for and treat prostatic diseases, although the latter probably demand more expert knowledge than the former.

As soon as the diagnosis of prostatic hypertrophy is made, the patient should be referred to a competent urologist for further examination and to ascertain the amount and extent of the enlargement by means of cystoscopy and other methods at his command. The cystoscope enables him to ascertain the size and whether the obstruction is a median lobe or bilateral enlargement as well as the condition of the bladder mucosa. He can also determine the presence of complications such as diverticula or calculi; the amount of residual urine is measured and the damage resulting to the kidneys, therefore, is estimated.

The excretion tests as well as blood retention tests are made together with total urinary output for 24 hours also specific gravity and extent of the bladder infection. All of these tests must be made before a patient can be accurately passed on as a good operative

risk. The majority of these cases referred to the genito-urinary surgeons are in a state of urosepsis and require a great deal of attention and care, as we would give a baby, in order to put them in condition where they can stand an operation.

The first thing to be done is to give them proper drainage and relieve the back pressure either by systematic catheterization or suprapubic drainage. Care must be taken in relieving an over distended bladder as the sudden withdrawal of a large amount of urine might prove fatal, due to acute congestion of the kidneys with suppression of urine.

The preliminary cystotomy should be done either under local or spinal anesthesia and the patient gotten out of bed at the earliest opportunity. If the drainage tube is properly placed in the fundus of the bladder, there will be no leakage around the catheter and this will give the patient immense relief in preventing the awful tenesmus and difficulty in urinating. This drainage tube can be connected to a bottle at night obviating the necessity of the patient being up from five to twenty times with resulting loss of sleep. It is surprising to see the beneficial results following bladder drainage in these old prostatitis. The urgency of urination is relieved as well as the irritability and, as a result, they begin to sleep better, their appetite is improved, and they rapidly gain in weight. The septic condition is gradually thrown off and they pass through the second cycle of the operation in a greatly improved condition. The back pressure on the kidneys being relieved, they begin to swell and become more congested and it is the careful attention and care that helps to tide them over this phase and gradually brings the kidney function to a more normal condition. There has been some tendency in the past to rush the patient through this so-called first stage, but experience has shown the disastrous results in so doing, so that we now allow the drain to remain in the bladder for weeks and even months in some cases, depending on the individual case. These old men are a law unto themselves so no fixed rule can be laid down about when the prostatectomy should be done. They may be permitted to go home and return some months later for operation. Careful instructions should be given the patients

as to their care as they must be gradually nursed to health and put in a condition which would permit the operation to be performed. Large amounts of water should be ingested and the daily output should be at least 2500 c.c. It is very essential that the total amount be at least this amount. A moderate amount of exercise should be taken, and they should receive every encouragement as to the ultimate outcome of the second operation.

SUMMARY.

1. The general practitioner should be on the alert for these old prostatitis, remembering that the sooner they are drained, thus relieving the back pressure on the kidneys, the more favorable the outlook.
2. Preliminary drainage is very essential either with indwelling catheter or preliminary cystotomy under local anesthesia.
3. Great care must be exercised in relieving a greatly distended bladder. It is imperative that it be done gradually.

FOREIGN BODY IN THE POST-NASAL SPACE. REPORT OF A CASE.*

By E. R. MILLER, M. D., Harrisonburg, Va.

In the April, 1919, number of the VIRGINIA MEDICAL MONTHLY, I noticed an article by Dr. Joseph B. Green, U. S. Naval Hospital, Norfolk, Va., in which he reported a case of a soldier wounded in the battle of Belleau Woods, on June 25th, and operated upon on December 12th, following, for removal of a fragment of shell from the antrum. Dr. Green closes his report of this very interesting case with the remark, "The point of special interest is the fact that such a large fragment of shell could pass through the bony structure of the face and remain in the antrum so long (about six months), without causing symptoms by its presence."

Dr. Green's case leads me to present to you the following case, which I believe will be of some interest to this Society.

On April 21st, 1919, I. J. H., aged 50 years, a farmer, consulted me about a foul smelling discharge from his nose. On inspection I found a large amount of free-bleeding granulation tissue, bathed in pus, and with a probe came in contact with a metallic substance in the post nasal space.

He gave the following history: Four years

*Read before the Valley Medical Association at its semi-annual meeting, Staunton, Va., May, 1921.

previous to his visit to my office, while living in a Western State, he fired an old muzzle-loading gun, which burst when fired. He was rendered unconscious and remained so for more than a week. On regaining consciousness he found a wound on the right side of the face which healed in the usual time but, after a few months, a foul discharge from the nose began, gradually becoming more offensive. I referred the case to Dr. T. C. Firebaugh, of Harrisonburg, Va., for X-ray examination. His report showed a dense opacity in the post nasal space, and pus in the right antrum. On May 1st, under ether anesthesia, I did the Caldwell-Luc operation for abscess of the antrum and found a part of the nasal wall of the antrum destroyed. The antrum was filled with pus. I found the removal of the foreign substance most difficult. I first thought I was dealing with a mass of burnt powder and tried to crush it. Finding crushing impossible, I seized the mass with a strong nasal forcep and, with all the strength at my command, succeeded in dislodging and very slowly delivering through the nostril which, fortunately, was very large. The sacrifice of some mucous membrane was the only damage done to the nose. There was a most profuse hemorrhage following the detachment of the mass, which was controlled by packing. The foul discharge continued for a few days but was very promptly relieved by irrigation with a 1% Dakin solution. A week after the operation I removed with the nasal snare several large pieces of granulation tissue. The patient was discharged in three weeks and inspection six months later found him in perfect health and no discharge whatever from the nose.

The foreign body proved to be the breech-block of the gun. A scar about two inches long, running from just beneath the orbit, parallel with the nose, showed that this large piece of metal had penetrated the bony structures of the face and it remained there for a little more than four years. The foul discharge, headache, and a general feeling of languor were the only symptoms complained of.

**You are expected at the Lynchburg
meeting. Be sure to attend.**

THE USE OF GLUCOSE INTRAVENOUSLY IN CERTAIN POST-OPERATIVE CON- DITIONS.*

By A. De T. VALK, M. D., Winston-Salem, N. C.

A reasonable amount of work has been done on the use of glucose intravenously in various medical clinics and its value appreciated, particularly its use in febrile conditions with especial reference to pneumonias.

From its physiological action, there is no question why it should not have a place in the treatment of certain post-operative conditions which have been brought forth by several writers. Not only from the standpoint of promoting diuresis is it useful, but most essentially from the standpoint of combating acidosis.

Crile has advocated the use of glucose along with soda bicarbonate and salt solution per rectum, this having the advantage over simple salt solution in the fact that it contains a substance that actually possesses some food value as well as the alkali effect of the bicarbonate of soda. When tolerated well by the patient, this, no doubt, increases elimination and prevents acidosis to a certain extent.

Farrar, in a recently published article, states that the use of glucose intravenously, given during operation, lessens the acidosis incident to operation. This is quite true, but, in view of the fact that only a very small number of operative cases will manifest symptoms sufficient to warrant more than the ordinary post-operative treatment, there is a question as to whether this should be advocated as a routine measure.

However, there is a certain group of cases in which there is present a definite post-operative acidosis with that distressing feature of persistent nausea and vomiting which is most disconcerting to the patient as well as the surgeon, in which we have been using glucose intravenously with very gratifying results. These patients are, of course, unable to take fluids by mouth and, as a rule, do not react to proctoclysis with any degree of satisfaction. Acetone is usually present, and at times diacetic acid may be found in the urine of these patients. In fact, the condition is one of a vicious circle in which the primary nausea and vomiting is reflex or toxic, but soon be-

*Read at the annual meeting of the Medical Society of the State of North Carolina at Pinehurst, N. C., April, 1921.

comes the nausea and vomiting of a true acidosis with necessarily a decrease in the urinary elimination that practically always shows a moderate trace of albumin and casts.

It is this type of case in which we advocate the use of glucose intravenously, and it is really surprising to note the marked improvement in such cases after its use. The reaction that follows the administration of glucose intravenously is mild or no general reaction may be noted. However, as a rule, shortly after giving this into the vein, there is a moderate amount of sweating and the skin feels moist over the entire body. This may reach a profuse sweat. Along with this there is generally noted a fall in temperature, if this is elevated, probably due to the elimination through the skin as well as the urinary system, and the patient will state that he or she feels better. The drop in temperature is not immediate, though usually manifests itself within a few hours. The pulse usually shows a moderate drop in rate, though this may be slightly accelerated initially. The blood pressure is not materially influenced by glucose, although there is usually an immediate drop of about 10 mil. of mercury.

Greatest of all is the marked improvement in the urinary output, which generally takes place rather quickly, within three to four hours, and may last over a period of twenty-four hours. If previous to the administration of glucose the urine showed acetone or diacetic acid, this will be found to be greatly diminished and rapidly disappear. The same is true as to the presence of albumin which will be found to be diminished—probably due to the dilution of the urine as there is a definite increase in quantity.

The marked improvement in the general appearance of the patient is quite evident and nausea and vomiting, in most instances, clears up surprisingly.

One typical case might be mentioned—that of a patient on whom a Cæsarean section had been done for toxæmia of pregnancy. For twenty-four hours immediately following operation, this patient voided only five or six ounces of urine containing acetone, a large amount of albumin, which, of course, had been present previous to operation, and an enormous number of casts. Four hundred c.c. of glucose solution was given intravenously, and for the following twenty-four hours the out-

put was between 60-70 ounces of urine, showing a very decided improvement as to albumin and casts. At the end of this time only a slight trace of acetone could be found. There was a moderate drop in temperature—about 2 degrees—but this did not hold over four or five hours. The pulse, however, dropped in proportion to the temperature and remained so. This patient had received Crile's solution per rectum during the first twenty-four hours following operation, though she had taken little water by mouth owing to marked nausea and vomiting. This cleared up quite rapidly following the administration of glucose.

Cases of infection, in which there is necessarily an elevation of temperature other than the usual slight post-operative rise seen in most instances, show a definite drop of from one to two degrees, but this may not hold for more than a few hours when the former level is again reached. There is, however, most frequently a permanent drop in pulse rate.

The fact that glucose possesses a high food value that is easily and readily assimilable it can play an important role in the prevention of protein catabolism of the body tissues. This being the fact, it can be seen that it has a rather broad field of usefulness, especially in febrile conditions. Just here might be mentioned the use of glucose in pernicious vomiting of early pregnancy in which there is present the starvation acidosis with large quantities of acetone in a scanty urine. Excellent results have been obtained in a limited number of cases.

A careful study of the urine should be made in all cases, that an incipient diabetes is not present, although studies in the sugar content of the blood immediately after injection of 250 c.c. of 10 per cent. solution of glucose show from .08 to .1 per cent. blood sugar above the normal limit, which in the normal individual is almost a negligible consideration. Further, these higher figures rapidly return to normal after the lapse of a few hours.

From a physiological standpoint, the injected glucose passes rapidly from the blood stream to the tissues and there is utilized at the same rate of injection, provided this does not exceed 0.8 gm. per Kg. of body weight per hour. If this rate is exceeded, glycosuria develops.

We are convinced that the intravenous route possesses the advantage over other methods

in that it is practically painless, is very simply done, and, most important, owes its diuretic properties to this method.

If given subcutaneously or per rectum, it has first to pass the living membrane and, in so doing, assumes a colloid form and, like other colloids, diminishes diuresis. On the other hand, if put directly into the blood stream, it circulates as a crystalloid and, like other crystalloids, is a diuretic, due to its power to absorb water from the tissues.

As to the method of preparation and administration, we have found that a 10-20 per cent. solution, made with freshly distilled water, titrated and neutralized with sodium carbonate, filtered and autoclaved on three successive days, is most satisfactory. It is first put into 250 c.c. (8 oz.) bottles, as they are easily obtained and inexpensive.

A small needle, 20 c.c. Luer syringe and a three-way stopcock is all the apparatus necessary, the original bottle acting as a reservoir. The solution should, of course, be given at body temperature. An electrical pump has been devised by which the rate may be accurately sustained, but this is an expensive instrument and hardly has a place in the ordinarily equipped hospital.

The use of this solution intravenously is simply suggested as an adjunct to the general post-operative treatment, but in such cases where one contemplates its use, do not wait until there is an overwhelming acidosis present before doing so.

From 250 to 500 c.c. can be given with safety as often as every six to twelve hours, according to the general consideration of the patient. From the known physiological action of glucose given intravenously, it seems very reasonable to advocate the feeding of a high carbohydrate diet to patient previous to operation as well as the use of bicarbonate of soda during this time. Purgation of patients just before operation causes the loss of much body fluid and in itself predisposes to acidosis, as mentioned by Farrar.

In debilitated individuals, or such cases where one anticipates a lengthy operation with prolonged anaesthesia, loss of body fluid, etc., the administration of glucose intravenously immediately or during operation no doubt plays a large part in preventing subsequent acidosis.

THE CONSERVATIVE TREATMENT OF ECLAMPSIA.*

By J. A. LIPNICK, M. D., Norfolk, Va.

The purpose of this paper is to call attention to the new treatment of eclampsia, as it is now being viewed by students of this subject. With the advance of surgery, Cesarean section and other surgical procedures became very popular. However, recently, men, who previously advocated surgical procedures, are now bending toward conservative treatment for reasons which I hope to point out briefly in this talk.

I will, therefore, review in a few words the etiology, pathology and diagnosis before proceeding with the treatment.

DEFINITION:—Eclampsia has been defined as convulsions of the entire body with loss of consciousness, occurring in pregnancy, labor or postpartum.

ETIOLOGY:—In spite of the many investigations and researches on this important and serious malady, the cause of eclampsia has not been determined.

There are two distinct theories which are now being considered in the etiology of the disease. The Rotunda school, with Smellie as its exponent, teaches that the toxin is elaborated from the food taken; that is to say, due to some error in the metabolism. The other school considers it due to placental albumin finding its way back in the maternal blood in such large quantities, that the antibodies elaborated cannot take care of the toxins and, as a result, we have the convulsive attacks.

This has a very important bearing on the treatment pursued by the various schools. The first school teaches little or no interference with labor, while those of the second view advise radical procedures, such as induction of labor by vaginal or abdominal section, etc.

DIAGNOSIS:—This is usually not difficult. It frequently, however, has to be differentiated from epilepsy, hysteria, uremias, strychnine and phosphorus poisoning, but careful history and examination and the constant presence of albumin in the urine, make the diagnosis comparatively easy.

PATHOLOGY:—For many years we have been

*Read before the Norfolk County Medical Society, March 28, 1921.

under the impression that the pathological lesion of eclampsia is in the kidneys. It is true that the disease is usually accompanied by a large amount of albumin in the urine, but the fact remains that very few women with chronic nephritis develop eclampsia during their pregnancies.

Later researches also showed that the main lesion is in the liver, where on autopsy we find small hemorrhages throughout this organ. This was confirmed by Schmorl who performed autopsies on 17 women who died from eclampsia. This observer also demonstrated areas of necrosis and fatty degeneration of the liver tissue. We are, therefore, justified in attributing the pathology of this disease to the liver rather than the kidneys.

TREATMENT (Prophylactic):—In spite of its unknown etiology, it is admitted by all authorities that careful prenatal treatment will eliminate a great number of these cases. This consists chiefly in careful observation of all pregnant women who present themselves for advice and treatment. Blood pressure should be taken frequently and, if it reaches above 150 mmg. (systolic), steps should be taken to lower same. Urine should be examined about every two weeks during the last three months of pregnancy. Should the high blood pressure persist and the urine show constant presence of albumin and casts, patient should be kept on a strict milk diet, till marked improvement is in evidence.

Proper diet and clothing, normal habits, and the general rules of personal hygiene should be observed. Tight lacing of corsets should be prohibited. Constipation should be avoided by the administration of cathartics and enemata. Sweating should be encouraged by hot baths, etc.

As stated above, however, the object of this paper is to call attention to the cases in which prophylactic treatment did not bring about the desired results, or cases which are seen when in convulsions and in grave toxic stage.

I was very much impressed with the treatment that is instituted in the New York Lying-In Hospital where it meets with great success. At first one thinks that it is daring and dangerous practice to allow a woman in convulsions to deliver herself and not to proceed with the emptying of the uterus, such as we

have always been taught. However, seeing the remarkable results obtained from their very strict and correct records, and having had the privilege of personally observing six cases during my recent stay at the hospital, I believe that I would now have more courage to follow this procedure in private practice.

The procedure is comparatively easy, when one can obtain competent nursing, and is as follows:—As soon as the patient is seen with convulsions and the diagnosis of eclampsia is made, the blood pressure should be taken and a catheterized specimen of urine should be examined for albumin and casts. She is then placed in a quiet, darkened room, in charge of a competent nurse or attendant, and $\frac{1}{2}$ grain of morphine sulphate given hypodermically. Her stomach is then washed out and 2 ounces of castor oil poured in the tube and allowed to remain in the stomach. We then begin colonic irrigations with a five per cent. glucose solution in water.

If the blood pressure is over 175 mmg. (systolic), the woman should be bled till it is lowered to at least 150 mmg. Bleeding, however, is not advisable unless the patient is of the plethoric type, and is contra-indicated in the anemic woman, as a large amount of blood may be lost during the delivery, and we will have to contend with shock.

Within an hour of the initial dose, another $\frac{1}{4}$ grain of morphine is administered and repeated every hour till the convulsions have ceased completely and the respirations slow down to 8 per minute.

All the cases that came under my observation were delivered normally, except one in which low forceps were applied on account of a slightly contracted pelvis. In general, operative procedures were instituted in cases where it would have done in absence of eclampsia, such as Cesarean section in contracted pelvis, etc.

There is another reason why this treatment should appeal to the conservative surgeon.

Reviewing the literature to some extent, I find that the best obstetricians in this country and abroad state that with the radical treatment such as "bagging" accouchement forcé, vaginal and Cesarean section, the maternal mortality averages from twenty-five to thirty per cent., and a fetal mortality from forty to fifty per cent. This is a frightful

mortality for a disease which we all meet in practice.

On the other hand, Craigin (*Amer. Journal of Obst.*), reports that of all the cases treated in the Sloan Maternity Hospital by the conservative method, the maternal mortality was reduced to fourteen and five-tenths per cent. with a corresponding decrease in still births.

McPherson, of the New York Lying-In Hospital, reports a series of 67 cases with a maternal mortality of seven mothers, that is ten and four-tenths per cent., and twenty-eight and five-tenths per cent. of still born children. In a personal communication, this author reiterates his enthusiasm of this treatment, though previously he has been an advocate of radical procedures.

In passing, permit me to say a few words about morphine which is a very important factor in this treatment. We have always been told that this drug is a severe depressant in large doses, and that it checks all secretions of the glandular system. On the other hand, Rovier used large doses in 29 consecutive cases with no untoward effects.

The U. S. P. states that morphine checks all secretions of the glandular system, *with the exception of the kidneys and the skin, which it rather increases*. We, therefore, should not be so reluctant in employing this drug in large doses in such an emergency, providing it is done under the careful supervision of the attending physician.

To SUMMARIZE:—I would like to say that it is my belief that, owing to the fact that the radical treatment of eclampsia gives such a high maternal mortality and a still greater percentage of still births, the conservative medical treatment should be tried, unless there is an anatomical abnormality of the pelvis of the eclamptic women, necessitating surgical interference.

420 East Freemason Street.

The U. S. Civil Service Commission,

Washington, D. C., announces an open competitive examination for trained nurse and trained nurse (psychiatric), on December 7, 1921. This examination is open to both men and women. If interested, write at once to above named Commission for information.

LEST WE FORGET.

Memorial to the Late Joseph Price.*

By J. W. KENNEDY, M. D., F. A. C. S., Philadelphia, Pa.

The lives of great men usually record themselves, and yet I know of no man who did so much original great good for the medical profession which is so little recorded in tangible medical literature, as did the late Joseph Price. It is questionable if any man in the profession was so widely known as he, except those who were either conspicuous teachers in medical schools or those who had written themselves into fame by publication of standard medical works. Dr. Price had done neither. He forcibly stands out as the most unique character in American medicine. I use the term medicine in its broadest sense, not distinguishing between medicine and surgery, and I do this to more forcibly bring out the strong character of this man as a physician. One who was always first a physician and only next a specialist. Before I take up his remarkable character as surgeon, let me say a word about him as man and citizen.

He was a man of tremendous force; he knew no fear. His enthusiasm was unbounded; it was the greatest inspiration to those who knew him. He was the most devoid of diplomacy of any man of my acquaintance. He had built a Chinese wall around himself that force and opposition could not penetrate, and yet he was the most accessible man by any in need of charity or helpful word. You cannot analyze his life's qualities without depicting one of the most strong, helpful and interesting characters in American life. This will become apparent as I review the great things of interest in his life. His lack of diplomacy and strong convictions in what he thought was right are well illustrated in a conversation I had with a coal dealer who presented the doctor a bill for over a thousand dollars for coal delivered to his hospital. There was a discrepancy of fifty cents between the dealer's and Dr. Price's estimate of the account. The Doctor stood for his figures and the dealer, to avoid further disagreement, settled at Dr. Price's estimate. The coal dealer relates that Dr. Price sent him next day a

*As Dr. Price was a native of Virginia and one of whom this State was justly proud, we publish this memorial by Dr. Kennedy, after twelve years as associate and assistant of Dr. Price.

thorough-bred calf, paying express and all expenses amounting to over one hundred dollars.

He was the most approachable man among the conspicuous in his profession and yet had the reputation of being surrounded by armor plate. He was most alert and his active brain worked in all surroundings. A foreman on the Doctor's farm relates an incident which is so typical of Dr. Price's alertness. There were twenty Italians attempting to move a building on the Doctor's farm; they had fastened a rope to the building and were pulling it over some rollers. The Doctor came on the scene, took hold of the rope and began to pull; suddenly the rope broke and every man went back on his haunches excepting one Italian. The Doctor was the first on his feet and said to the Italian who did not fall: "Get off of my farm, you contemptible loafer; if you had been pulling you would have gone down, too," and he did discharge this man.

He was the keenest observer of men who attended his clinic, and had no use for a physician who did not keep his hands and linen clean. He often said to me in regard to visitors who attended his clinics, "Never take a physician through the hospital who does not think enough of himself or his profession to keep himself clean; he will kill some one," and he meant it.

He was extremely fond of the young physician; it never was too much trouble for him to show the beginner any courtesy in his power. He never was an actor. He never courted the nobility of his profession. I never saw him do a spectacular thing in my life. He had no use for the man who operated by the clock. He was the most bitter enemy the profession ever had to advertising in any particular.

Professional graft was as far from his make-up as fashion is from reason. Although a man of no means, he conducted throughout his life the largest private surgical charity in this country.

Although physically a powerful man, he was most gentle in his examinations, and his tenderness to the suffering was one of his greatest charms to me. He never was in too much hurry to stop and turn the colored patient, straighten her gown, smooth the wrinkles from the sheet, and yet he was the greatest surgical gladiator the profession has ever seen—a man seemingly full of contradic-

tory qualities but ever sturdy in his purpose of helpfulness.

He was a great lover of outdoor life, his farm was a small menagerie. He was a most interesting companion in a horseback ride over his farm, constantly talked of higher education, and had no patience whatever with fad or fashion. He constantly joked with his assistants, but protected them in all hazards of professional work. He often said to me, in my early apprenticeship when he thought a patient had small chance of recovery, "You had better say I did that operation." He was as big as a mountain when it came to carrying surgical responsibility.

He had no patience with professional politics. Never courted any society to be its president. He was strongly opposed to any young physician accepting a salary, stating that it often ended a useful life. He was most bitter against commercializing the profession, and said no physician should sell himself to any company; that the physician should be compensated for the work he did, regulating his own charge.

He predicted fifteen years ago just what the profession is facing today. The corporations and State are taking the soul out of medicine and with it will go progress. I have known him to go to court to fight for an enemy, but I question if he ever forgave any one for an insult. He was an unrelenting and bitter fighter if the fight was on.

Is it not the saddest thing in life that so often some small eccentricity, which is often found in a great man's life, is so often exaggerated until it partially obscures the splendor of a great man's soul? Small men just will not permit any man to be great.

Dr. Price's life as surgeon and teacher was brilliant beyond description. He came into the surgical arena at the dawn of both abdominal and aseptic surgery, and with his usual force and sagacity drove his specialty far beyond its natural pace. He was a pioneer of unprecedented force in abdominal surgery. He was often cautioned by his elders not to go too fast, that much was then uncertain and serious mistakes could be easily made. In spite of his early work where many of the serious surgical problems had not yet been worked out, it can be said of him that no man living or dead so early modernized himself, and to this hour no man has so little to apolo-

gize for in his great scope of surgical judgment. During my twelve years' association, I never heard him make a surgical prediction but that it has come true. I never knew him to take up a certain procedure which did not live, and I have heard him condemn many popular surgical procedures of which I have lived to hear their death knell. His early wisdom in surgical judgment is the most consummate of my knowledge, and much he taught over thirty-five years ago is more modern than the present teaching. Few men indeed have had that combination of surgical skill to be brilliant plastic (perineal and cervical repair) and abdominal operator. He has often been referred to as an operator of the combined qualities of an Emmet and a Tait. Certainly the living will permit me to say, it is questionable if any operator living or dead was so the master of difficult abdominal surgery. His ability to deal with big adherent tumors, difficult enucleations of tubal and ovarian infections, peritonitis and pus forming lesions in general, was most masterful. Did he have an equal? There is scarcely a prominent operator in America but who has often been referred to Price's masterful ability in different lines. Those who ever saw him break the universal adhesions in a plastic variety of tubercular peritonitis saw the most classical demonstration of manipulative skill possible in surgery.

It was this ability to deal with adhesions which permitted him to meet the indications in the urgent abdominal conditions as no one of my acquaintance could, and it is the absence of this quality in the popular surgical profession of this hour which has taken from us thirty-five years of progress in the most urgent abdominal conditions. Dr. Price's great vision was first demonstrated at the dawn of abdominal surgery in the slums of Philadelphia. Operating on an ironing board in the midst of filth and squalor, he did one hundred operations for pyosalpinx with a single death. Is it any better today in the modern hospitals?

These same principles which he acquired in surroundings of most adverse circumstances were carried throughout his life. From necessity, slum work made him boil out all unnecessary paraphernalia and reduce his surgical technique to necessities' naked means. He thus became a great master of possibly the

most simple technique of any operator. We can sometimes look backward and modernize our lives.

Dr. Price was one of the very earliest advocates in this country of aseptic surgery as opposed to antiseptic surgery. His work in obstetrics in the Preston Retreat and the Philadelphia Dispensary was a most eloquent appeal for the aseptic conduct of this work; and if his career had stopped with his teaching in obstetrics, he would even then have done his profession a great service.

So far as I know, there is no procedure in surgery nor an instrument which bears his name, and yet he was the most original operator of my acquaintance; but this is as he would have it. I know many surgical procedures which were unique with Dr. Price and many could easily bear his name. I remember hearing him rebuke an instrument salesman who tried to sell him an instrument which he called "the Price" so-and-so.

He had no use for the squabbles of the profession over priorities. I once said to him: "Mr. Lane's link is your elbow." He said: "Mr. Lane has beautifully written it up and is entitled to any claim he may make." Some years before Mr. Lane brought out his Lane's link, we assistants had called the same condition the "Price elbow," as Dr. Price in demonstrating the condition was in the habit of exhibiting his elbow with arm flexed and then, after incising the fibres which produced the link, he would straighten out his elbow and say: "You see, I take the elbow out of the bowel just as I do when I straighten my arm." He would then finish his discussion by saying, "You must always examine the last few inches of the ileum; it is prone to be fixed in the pelvis." Truly, great men care little who does a thing just so it is done.

His vaginal hysterectomy was unique and classical in his hands. I have assisted him in doing hundreds in five minutes and many in two and three.

His appendectomy as a stumpless operation is unique and the most thorough procedure I know. I could go on for pages with procedures which might bear his name and have a more legitimate patent right than numerous procedures I know which do take the name of those who are willing to have surgical namesakes.

I am in possession of a letter from Dr.

Thomas Addis Emmet, written on his eighty-fourth birthday to Dr. Price, in which Dr. Emmet says: "You (Dr. Price) are the only operator who was ever able to do my operation from a single demonstration and have done more to establish its teaching than I." Dr. Price loved to demonstrate repair work of the cervix and perineum, and thousands who saw him work will say he had no peer. His hand work with small straight needle and fine silk in all lesions of the intestines was so full of grace and dexterity that one would marvel how such skill came from such clumsy looking hands. He was strongest in his clinical teaching; his operative demonstrations with his most simple technique were forceful beyond description. It can be said without fear of unfair comparison that his clinic in his private hospital was the most unique, as no Trendelenburg position was ever used, no absorbable ligatures used, retractors never used, terraced method of sutures not used, rubber gloves not used, which is certainly enough difference from popular teaching to place his clinic in a class by itself; such teaching has remained to this day in the Joseph Price Hospital.

His diagnostic ability in abdominal lesions was almost a gift or a blessing. During my twelve years' association, I never saw him make the second incision on account of error in diagnosis and never saw him introduce the entire hand into the abdominal cavity for diagnostic purpose. It was remarkable how much he could do in a very small incision. He was beginning to bitterly condemn the big exploratory incisions which were becoming popular before his death, as he recognized the same meant feebleness in diagnostic ability.

Dr. Murphy refers in literature to Dr. Price's consummate skill in difficult surgical enucleations of pelvic conditions and says: "He has taught more in peritonitis and pus forming lesions of the abdominal cavity than all of us."

Dr. Howard Kelly said: "Price was the most forceful teacher of his age."

Dr. Deaver has said: "No one could handle peritonitis and intra-abdominal pus as Price."

Dr. W. J. Mayo has said in literature: "The three men to whom the world is most indebted in abdominal surgery were Price of America, Pean of France, and Tait of England."

Dr. Louis McMurtry has said: "There are few surgeons in America who do not in some way show the handwork of Joseph Price."

There is no end to like comments from veterans in the surgical arena, and yet Philadelphia permits him to remain humbly dead.

One of the greatest services to his country was his constant interest in the local hospital. He dedicated more such institutions than any man in America and held clinics in nearly every State of the Union.

He was the one operator who said: "There must be a local surgeon; don't bring your patient to me; urgent abdominal lesions must not be shipped."

He told the local men to go to work, encouraged them to visit teaching institutions, was ever anxious to help and show them. He showed a deep, sincere and unselfish interest in these local hospitals, and the distance was never too great for him to go to aid and popularize this work. He was in this work the greatest philanthropist of my acquaintance. He had a deep interest in the army and navy physician and early advocated an educational institution at Washington like the one that has been established.

His great scope of surgical judgment permitted Dr. Price early in his life not only to say much of the early surgical pathology of many subjects, but he early modernized these subjects. He took up the surgical pathology of tubal and ovarian infection and extra-uterine pregnancy, where Mr. Tait left off and said the very last words in these subjects.

Review, if you please, the earliest discussions on appendicitis and, if you like, acute abdominal lesions and you will find Price forging way ahead of his seniors and advocating early uniform removal of the appendix when other prominent operators were only advocating the operation of necessity after the abscess had formed. He said the last word in appendicitis, and he and Dr. Emmet in cervical and perineal repair. Any failure in their teachings comes from a misunderstanding or a failure to do their work as they did it. I find this too often so.

In his teaching he was most eloquent and forceful in bringing out the clinical picture of the diagnosis and depended less on the laboratory than probably any important teacher in this country. I received many rebukes from him because I had failed to bring out the clinical

ca¹ valuable points in making a diagnosis. He, Murphy and Rovsing were much alike in this respect.

Dr. Price was not logical in his discussions or writing, and for this reason will receive less credit in the future of his profession than any strong man in it. I believe you cannot more compliment a man than to say of him, he cared more for a thimble full of love from a deserving public than a hogshead of admiration from a distinguished few. This was Dr. Price. His life records his wish. He forcibly lived; he is humbly dead. As my teacher and master, I loved his force, I revered his gentleness to the suffering, and rejoice that he permitted me to serve him.

241 North Eighteenth Street.

GUN SHOT WOUND.

By R. H. PRETLOW, M. D., Suffolk, Va.

The patient, a colored woman, aged 25 years, in good physical condition, was wounded with a .12-gauge shotgun at short range. The charge entered the right buttock from the left, just missed the anus and made an opening of entrance about the size of a silver quarter of a dollar. When it reached the gluteus maximus muscle, the expansion of the charge acted as if it actually had been placed there and set off. It tore a cavity or crater about six inches in diameter and to the depth of half through the gluteus maximus. A narrow isthmus of skin with underlying subcutaneous tissue remained from the opening of entrance to the crater—a tunnel for a distance of about two inches.

The patient was taken immediately under treatment. The wound was cleaned and drained. Patient was inoculated with 5,000 units of tetanus antitoxin.

The burn and destructive process had entered so deeply into the tissues that there separated a membrane-like slough to the thickness of an orange peel and almost a complete cast of the tunnel and crater. Granulation proceeded rapidly to complete recovery.

As we are admonished by the pioneer de Vigo, "They are contused and burned, also poisoned by the powder, hence are hard to cure."

IN WRITING ADVERTISERS, PLEASE MENTION THIS JOURNAL.

Proceedings of Societies

Walter Reed Medical Society of Virginia.

Last May, forty-six physicians from counties in the eastern section of Virginia, met at Gloucester C. H., Va., the birthplace of Dr. Walter Reed, to consider the advisability of doing something worth while as a memorial to him for the great service he rendered mankind. After mature deliberation, it was decided to organize a strong medical society as a most fitting tribute to his memory and that this society would meet at least twice a year and endeavor to be an A-1 Society. The following officers were elected: President, Dr. H. A. Tabb, Gloucester; vice-presidents, Drs. J. W. D. Haynes, Mathews; Brown Evans, Saluda; H. D. Howe, Hampton; Rea Parker, Smithfield, and W. W. Kerns, Bloxom; secretary-treasurer, Dr. L. E. Stubbs, Newport News.

The autumn meeting was held in Newport News, September 14 and 15, with an attendance of more than 100 and the meeting was a tremendous success in every way. The papers were of a high order and the social features were exceedingly pleasant. The annual meeting will be held at Saluda, in April or May, 1922.

The Valley Medical Association

Held its regular semi-annual meeting in Winchester, September 29, under the presidency of Dr. M. J. Payne, of Staunton. A number of new members were admitted, making the membership of this society more than a hundred. A number of interesting papers were read and discussed and Drs. P. W. Boyd, Winchester; D. M. Kipps, Front Royal, and R. S. Griffith, Basic, were elected delegates to the Lynchburg meeting of the Medical Society of Virginia.

It was decided to hold the next meeting in Harrisonburg, on the last Thursday in May, 1922, and the following officers were elected: President, Dr. C. E. Conrad, Harrisonburg; vice-presidents, Drs. Hunter McGuire, Winchester, and Harry Wallace, Greenville; secretary, Dr. A. F. Robertson, Staunton; and treasurer, Dr. J. M. Biedler, Harrisonburg. The executive committee is composed of Drs. W. L. Hudson, Luray; R. C. Randolph, Boyce; P. W. Boyd, Winchester; Reid White, Lexington; D. M. Kipps, Front Royal; W. C.

Ford, Woodstock; Geo. V. Wood, Jr., Harrisonburg, and M. J. Payne, Staunton. A committee on Social Hygiene was appointed, the members of which are Drs. J. S. DeJarnette, Staunton; J. H. Deyerle, Harrisonburg, and P. W. Boyd, Winchester.

The Southside Virginia Medical Association

Held its regular quarterly meeting in Victoria, September 13, the president, Dr. E. L. Kendig, presiding. There was a large attendance and a full program, consisting of many good papers, was rendered during the afternoon session. Dr. J. Shelton Horsley, Richmond, gave an illustrated address to the association and public at the night session, on the subject, of "Some Modern Views on the Nature and Treatment of Cancer." An unusually large crowd was present. Dr. W. D. Kendig, Kenbridge, was elected delegate to the Lynchburg meeting.

Not the least enjoyable feature of the meeting was the splendid supper tendered the Association at 7 P. M., by Dr. E. L. Kendig, on the lawn of Kendig Bros. Hospital. The next meeting is to be held in Petersburg, December 13, at which time will be held the annual election of officers.

R. L. RAIFORD, *Secretary*.

The American Roentgen Ray Society

Held its twenty-second annual meeting in Washington, D. C., September 27-30, under the presidency of Dr. Arthur C. Christie, of Washington. The exhibits were excellent and the program was most elaborate. There was much discussion of the new high voltage X-ray treatment for deep malignant disease. Among the attractions of the meeting may be mentioned the Caldwell Lecture, by Dr. Rene Ledoux-Lebard, of Paris, his subject being "Progress of Deep Roentgen Therapy." Dr. Ledoux-Lebard, although a Frenchman, read this in the purest English. The Caldwell Lecture was established at last year's meeting in honor of the memory of Dr. Eugene W. Caldwell, of New York City, who died in 1918, a martyr to X-ray work.

As a memorial to Dr. Charles Lester Leonard, of Philadelphia, whose death was also a result of X-ray burns, a \$1,000 prize has been offered each year for the best original investigation along X-ray lines. The first prize was awarded this year to Dr. A. J. Pacini, of the X-ray and Laboratory Section

of the U. S. Public Health Service. The subject of his investigations was "The Anthropometric Development of the Skull." Among the prominent invited guests from abroad who were listed for papers were Drs. Reginald Morton, of London; Prof. Dr. P. A. Lilienfeld, of Leipsic; Prof. Dr. Friedrich Bessauer, and Dr. Hans Holfelder, both of the latter of the University of Frankfurt.

Probably the most notable feature of the meeting was the banquet which was given in honor of the twentieth anniversary of the work of Dr. Fredk. H. Baetjer, of Johns Hopkins, as a roentgenologist. On this occasion speeches were made by Drs. W. S. Thayer and J. M. T. Finney, of Johns Hopkins University, Baltimore, by Dr. Ledoux-Lebard, of Paris, and Dr. Pierce, of London, England. A volume containing about 200 letters from Dr. Baetjer's friends and admirers all over the world was presented him as an anniversary present.

Dr. W. H. Stewart, of New York City, was elected president, and Dr. Hollis E. Potter, of Chicago, secretary. The next meeting is to be held on the Pacific coast, possibly at Los Angeles, the time and place to be determined later.

The Loudoun County Medical Society

Held its regular meeting September 8, in Leesburg, decided interest being manifested in its proceedings. It was decided hereafter to hold its meetings on the first Wednesday of each month rather than four times a year as in the past.

Dr. G. F. Simpson, Hamilton, was elected president, and Dr. Samuel L. Steer, Waterford, secretary.

Dr. J. W. Marshall, Leesburg, and Dr. L. T. Rusmiselle, Waterford, were elected delegate and alternate, respectively, to the State Society, and, after due discussion, were instructed in favor of the location of the Medical Department of the University of Virginia at Richmond.

SAMUEL L. STEER, *Secretary*.

The Roanoke Academy of Medicine,

At the first regular fall meeting, October 3, 1921, elected the following officers for the ensuing year: President, Dr. T. Allen Kirk; vice-presidents, Drs. A. P. Jones and J. D. Willis; secretary-treasurer, Dr. Claude Moore.

Drs. W. L. Whitman and S. B. Cary, both of Roanoke, were elected delegates to the Lynchburg meeting of the Medical Society of Virginia, and Drs. George M. Maxwell and W. L. Powell, both of Roanoke, were elected alternates.

CLAUDE MOORE, *Secretary-Treasurer*.

The Fairfax County Medical Society

Elected the following officers at its meeting held August 4th: President, Dr. B. H. Swain, Ballston; vice-presidents, Drs. Tom A. Williams, Washington, D. C., and C. A. Ransom, East Falls Church; corresponding secretary, Dr. O. H. Coumbe, Washington, D. C.; recording secretary, Dr. Wm. P. Caton, Fairfax; treasurer, Dr. F. M. Brooks, Swetnam. Dr. Brooks was elected delegate to the Lynchburg meeting of the Medical Society of Virginia, and Dr. George T. Klipstein, Alexandria, was elected his alternate.

WM. P. CATON, *Secretary*.

The Buckingham County Medical Society

Met on the 7th of September, and elected Dr. Jos. H. Mitchell, Dillwyn, president, and Dr. John Randolph, Arvonnia, secretary.

Dr. Perkins Glover, Arvonnia, was elected delegate to the fifty-second annual meeting of the Medical Society of Virginia, at Lynchburg, in October, and Dr. J. Randolph, Arvonnia, was elected alternate.

J. RANDOLPH, *Secretary*.

Warren, Page, Rappahannock Medical Society

The regular meeting of this society was held at Flint Hill, Va., August 23, 1921, under the presidency of Dr. E. G. Brumback, of Luray, Va. Interesting papers were read by Drs. C. R. Dufour, Washington, D. C.; P. W. Boyd, and E. C. Stuart, Winchester, and J. H. Deyerle, Harrisonburg.

Medical Education

Medical College Merger.

TO THE EDITOR:

While not a member of the Medical Society of Virginia, permit me, if you will, to discuss briefly a phase of the Medical College Merger, not previously published in your journal.

It must first be admitted that in this agitation as to the location of the merged medical

schools, dentistry and pharmacy should receive the same consideration as that accorded medicine. There is now in full operation the department of dentistry of the Medical College of Virginia, a well recognized Class A school. Anything which would interfere with the successful continuation of this school, with the same high standards, would deprive Virginia of its proper source of supply for adequately and properly trained dentists for this state. Virginia must not fail in its responsibility to the people in this respect.

It has already been stated many times that the Commission on Medical Education voted unanimously that the merged school should teach dentistry as well as medicine and pharmacy. Aside from the economic phase of teaching medicine, dentistry and pharmacy together (and it was the economy of the situation which prompted Governor Davis to send his message to the Legislature), there are classical and university advantages.

The same tendency which has characterized the affiliation of medical colleges with universities has been equally true of the dental colleges. In the first two years of the four-year course, instruction of dental students is largely the same as for medical students. How essential it is that dentistry and medicine be taught together under the same environment, since, after graduation, physicians and dentists are in intimate association of practice in ministering to the ills of the public. Surely, their education would be very much enhanced, to their mutual advantage, in a community of medical science, than would either one of the departments in the main university.

Just as there is a dearth of physicians for rural Virginia, the same condition is true of the shortage of dentists. The University of Virginia authorities have admitted on numerous occasions that a dental school can not now be established at Charlottesville. Why dismember medicine and move only the department of medical teaching to Charlottesville?

There is but one side to this agitation. All are agreed that the State of Virginia should teach medicine, dentistry and pharmacy and that they should be departments of the University of Virginia. They should all be taught together, where one will reap the benefits of the other.

Richmond, as the location, offers the only solution. Here, all the resources of the medi-

cal art would be at the command of the University of Virginia, if it but accepts the opportunity for service offered the institution.

HARRY BEAR, D. D. S.

Secretary's Announcement

Reduced Railroad Rates to Lynchburg.

No physician attending the meeting of the Medical Society of Virginia in Lynchburg will be able to secure the benefit of the reduction in railroad rates, secured by this office, unless every physician who goes gets from his ticket agent a certificate indicating that a one-way ticket at full rates has been purchased to Lynchburg. It is necessary that 350 physicians, including dependent members of their families, shall take advantage of this reduction.

DO NOT FAIL TO GET YOUR CERTIFICATE FROM YOUR AGENT.

Medical Defense.

At this meeting of the State Society, there will be presented a brief summary of explanation of one or two other state societies in providing medical defense for physicians against suit for alleged civil malpractice. The physicians of Indiana, for example, are taking care of this problem very satisfactorily, at a cost of seventy-five cents per member, annually.

If this is a matter of any interest to you, drop a post card to the Secretary-Treasurer, expressing your approval or disapproval of such a plan for our State.

G. H. WINFREY,
Secretary-Treasurer.

The Truth About Medicine

During August the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Beebe Laboratories, Inc.:
Beebe Protein Milk
Beebe Modified Buttermilk

Book Announcements

Diagnosis and Treatment of Brain Injuries. By WILLIAM SHARPE, M. D., Professor of Neurologic Surgery, New York Polyclinic Medical School and Hospital. Octavo 757 pages with 232

illustrations. J. B. Lippincott Company, Philadelphia. Price, \$8.

The development of a rational attitude toward cases presenting injuries to the skull and its contents has been one of the notable achievements of cranial surgery in recent years. Among the outstanding figures in the definition of this attitude and the successful practical application of it, Dr. Sharpe occupies a foremost position, and it is therefore singularly gratifying to get within one cover the results (and many of the details) of his vast experience. His wide acquaintance in this section, where he has visited, lectured and operated on several occasions, lends an additional personal interest to the publication.

The older conceptions of the essential status of a skull or brain injury have undergone a radical and much needed change. The fundamental error of dignifying the question of fracture of the bone as the consideration of primary importance will not longer, thanks to Dr. Sharpe and the others of his school, lead to unnecessary surgical interference or defer operations urgently required. It is now commonly recognized that on the one hand a skull crack, instead of demanding immediate operation, may actually, by releasing blood and cerebrospinal fluid, make it unnecessary; and on the other hand, that a disastrous intracranial condition imperatively calling for intervention may be caused by a head injury producing no demonstrable trauma to the brain case itself. In brief, each case must be estimated upon its merits and, when this is done, upon the principles soundly expounded by Dr. Sharpe, the expectant palliative method of treatment is found to be sufficient for two-thirds of these patients and operation is necessary in only one-third. When to this general attitude is added a judicious selection of time for intervention in those cases actually requiring it, the average mortality of fifty per cent for brain injuries is reduced to twenty-seven per cent.

In this publication, Dr. Sharpe devotes a section to a general discussion of recent advances in the diagnosis and treatment of brain injuries and follows this with a division of the remainder of the book between the consideration of (a) acute and chronic brain injuries in adults, and (b) acute and chronic brain injuries in newborn babies and children. The conclusions are based upon an experience

covering more than 1,000 cases. Not the least attractive feature of the volume is the citation in detail of a large number of these cases, together with careful autopsy studies in those terminating fatally.

J. F. G.

General Pathology. An Introduction to the Study of Medicine. Being a Discussion of the Development and Nature of Processes of Disease. By HORST OERTEL, Strathcona Professor of Pathology and Director of the Pathological Museum and Laboratories of McGill University and of the Royal Victoria Hospital, Montreal, Canada. 1921. Cloth. Pp. 357, with Illustrations. Price \$5.00 net. New York: Paul B. Hoeber.

It is not overpraise to state that this work of Oertel's is one of the outstanding books of the day. Written in a style that is commendable and in the scientific spirit without which every book on the subject of pathology falls short of being in the first rank, it gives the reader a thorough interpretation of all the problems in pathology, some of which no doubt have perplexed him on account of his limited knowledge, due to the fact that he has never been fortunate enough to acquire an illuminating book on the subject.

Three reasons which should commend Oertel's work to the thousands of physicians throughout the country are: Pathological processes are regarded as expressions of physico-chemical laws; the great educational value which accrues from a study of the historic development of ideas and hence an understanding of current ideas; the visualization of possible pathological occurrences based on the anatomical conceptions of the subject. These reasons should bespeak for the book a wide circle of reader. When added to these are a simplicity of presentation and clarity of thought that are evidenced on every page, it cannot be gainsaid, in all fairness to the author, that at last the American medical profession has a book at hand that is of so unusual a nature that it must be considered a hall-mark in medicine.

P.

The Assessment of Physical Fitness, By Correlation of Vital Capacity and Certain Measurements of the Body. By GEORGES DREYER, C. B. E., M. A., M. D., Fellow of Lincoln College, Professor of Pathology in the University of Oxford. In collaboration with GEORGE FULFORD HANSON. With a Foreword by CHARLES H. MAYO, M. D., Rochester, Minn. 1921. Cloth. Pp. 128, with XXIV Tables. Price \$3.50 net. New York: Paul B. Hoeber.

This book should command the attention of all physicians interested in industrial medicine.

actuaries of insurance companies, public health nurses and settlement workers, for the reason that unlike most books on the same lines, the author contends that the occupation of the individual plays a large part in his physical dimensions.

In the past, insurance companies have had hard-and-fast rules as to what the physical dimensions should be to make the applicant acceptable irrespective of his occupation, and the same remark applies to all those investigators of physical fitness who have followed the matter with more or less interest. Dr. Dreyer divides all workers into three classes and shows the differences in the physical measurements between Class A and Class B—men who have undergone prolonged physical training, or have an occupation which leads to muscular development, and men of the professional and business classes. Class C contains those who lead an extremely sedentary life, which it can readily be understood makes for a greater degree of under-development than would obtain among those of Class A or B.

That the theories advanced by Dr. Dreyer are sane cannot fail to be apparent at once to the physician who reads this book, and no doubt will not be long in attracting the attention of the actuaries of our various insurance companies. What with the Public Health Service and settlement workers already following the precepts laid down in this book and the strides made in industrial medicine in apportioning physical fitness on scientific lines, it will behoove all insurance companies to take into consideration, not lightly but with seriousness, the moment of a thorough understanding of the variations in physical measurements as these obtain normally in the man who does hard physical work, the man who does light physical work, and the man who leads a sedentary existence. Only in this way will insurance companies meet the problem in a just manner as to who should be accepted and who should be refused.

P.

Diseases of Children. Designed for the Use of Students and Practitioners of Medicine. By HERMAN B. SHEFFIELD, M. D., Formerly Instructor in Diseases of Children; New York Post-graduate Medical School and Hospital, and Medical Director, Beth David Hospital, Consulting Physician to Jewish Home for Convalescents and the East Side Clinic for Children. St. Louis, C. V. Mosby Company. 1921. 798 pages with 238 illustrations, mostly original, and nine color plates. 8vo. Cloth. \$9.00 net.

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Editorial

The Menace of the Cults in Virginia.

While all who are interested in the real progress of matters pertaining to health are congratulating themselves upon the prospect of greater public interest in medical education in the State, comparatively few know that a bill was introduced during the last Legislative session, and actually passed the Senate, the provisions of which bill would have admitted the graduates of even the lowest class medical schools to the state.

Among the news items of the present issue of the Journal appears a notice to the effect that a Chiropractor, practicing illegally in Danville, has recently been tried and acquitted. This is the second time this individual has been brought to trial with like result, notwithstanding the fact that a vigorous prosecution was made in both instances and that the instructions given the jury were a clear and definite interpretation of the law, and the proof of its violation positive.

Within the past year no less than four other similar prosecutions have been made by the Board of Examiners in the State, and, while three of these have resulted in convictions, in every instance the defendant has brazenly continued practice. There is evidence tending to show that in these prosecutions both the legal expenses, and fines of the defendants have been paid by an organization outside of the State.

We have been reliably informed that a bill is now in the course of preparation which will admit Chiropractors to legal practice in the State, notwithstanding the fact that diplomas are issued by their best schools, if their catalogues are to be relied upon, after a period of one year's study, and that no school has a course of more than three years.

If we may judge as to the prospects of the passage of this bill by what has been happening along this line, as above detailed, the probabilities are that it will become a law.

In order to place the situation squarely before the profession, the Medical Examining Board, at its June meeting, passed the following resolution, which is self-explanatory:

"Whereas, It is evident that the Chiropractic propaganda spreading throughout the United States has as its basis the placing of the large number of graduates from their short term proprietary schools, said at this time to total more than the graduates of all the reputable medical colleges of the country, and whereas a strong organization of the schools, here mentioned, and of their graduates, is apparently using every effort to push illegal practitioners into Virginia with the expressed purpose of obtaining such legislation as will lower the present medical standard, thereby admitting them to license..

Therefore, be it Resolved, That the Examining Board deems it a duty:

First. To apprise the legal practitioners of the State through the presidents of their respective organizations, and the Board of Health through its secretary, of the menace herein set forth.

Second. To call attention to the utter lack of funds necessary to effectually prosecute the number of illegal practitioners already established in the State through the agencies mentioned.

Third. To suggest that the various organizations of the State consider whether it be feasible at this time to enter into a campaign of education and publicity, such as that carried on in Ohio, Michigan, and elsewhere, in order to present to the public facts relative to the fraudulent and extravagant claims made by the organization under consideration."

While in certain localities the members of the medical profession have responded and aided in every way possible in the prosecution of the class of violators of the law under consideration, it is to be deplored that such has not universally been the case. It is not our purpose to condemn those who have not been interested in this matter, for after all they may be correct in the assumption that prosecutions undertaken under our present law serve only to advertise quackery and that it is the business of the public in general to defend itself from charlatantry. There would certainly be

good ground for this position were it not for the fact that our statute has placed the enforcement of the law in the hands of the medical profession, and the profession has accepted the trust.

In the light of the above facts the question at once arises as to why the enforcement of the law against Cults is so difficult. There are two manifest reasons:

FIRST and mainly, the Cults in general, and the Chiropractors in particular, through a most thorough system of organization, and through a persistent and systematic plan of advertisement, shrewdly gotten up, and carried on in the newspapers, by handbills, and otherwise throughout the country, patterning largely after the manner of patent medicine concerns, are able to make certain classes of the public believe that any and all diseases, from appendicitis to cerebrospinal fever, are easily curable through their simple ministrations, and that all prosecutions undertaken against them are persecutions.

SECOND. The bulk of the public, which is not so easily influenced, and the bulk of the medical profession, is indifferent; both shunning newspaper propaganda, and notoriety, with the result that, when cases come into court, a strong appeal is made to juries with the consequences above indicated.

In conclusion, we wish to state that the gist and purpose of this article is to set out the facts of the threatening situation, thereby placing the medical profession of the State in a position to determine for itself whether it be its duty or desire to educate the public and forestall the enactment of laws admitting a Cult whose course of study, and whose qualifications are below the standard required of Virginia medical schools and Virginia medical students.

J. W. PRESTON,

P. W. BOYD,

H. U. STEPHENSON,

Committee.

The Control of Cancer.

One of the greatest problems in medicine to-day is cancer. Apparently cancer is on the increase, though doubtless the increase is not as great as many statisticians would have us believe. The more accurate diagnosis and the more careful records of cases and of vital

statistics have brought out many cases of cancer that were formerly unrecognized. It is bad enough as it is, for a large percentage of men and women over thirty years of age die of cancer.

The American Society for the Control of Cancer is doing excellent work. This National Society has organized many State Societies and an effort is now being made to establish a branch in Virginia. The membership is not limited to the medical profession but public spirited and intelligent laymen are desired as members. It is the duty and should be the privilege of every doctor to take a leading part in any matter that concerns the health of his patients as individuals, or the welfare of society as a whole. The State branch of the American Society for the Control of Cancer is in process of organization. The chairman of the committee for Virginia is Dr. Robert C. Bryan, of Richmond. An intensive campaign will be launched throughout the United States from October 30th to November 5th, 1921. It is earnestly hoped that every member of the medical profession and every layman who is interested in public health will become members and will aid in this splendid work of preventing disease and so saving untold misery and suffering.

In the past it has been difficult to make much progress in interesting the public in the control of cancer. Possibly one reason is because there has been no satisfactory co-operation on the part of the public press. The cancer charlatan, like the patent medicine vender, has a wide commercial influence and it is to his interest to keep the public as ignorant as possible about the nature of cancer. With the shedding of light on secret nostrums and cancer quack cures, the commercial profit from this source would dwindle into insignificance.

While the cause of cancer has not been discovered, much has been learned in recent years about the nature of malignant growths. As a matter of fact, we know very little about the cause of anything. Viewed in a wide way from a biological standpoint, there is no more reason to wonder at failure to discover the cause of cancer than the failure to discover the cause of life in any of its various manifestations. The discovery of the cause of disease by so-called specific bacteria does not account for the origin of the bacteria themselves.

A growth on the tip of the nose, whether it be malignant or benign, is merely a part of the general biologic processes involved in the growth and existence of the body.

To be sure, there are isolated partisans of the general theory that cancer is caused by micro-organisms. Some of them are men of great ability. It is possible, too, that some such theory may eventually be proven. At present, the direct cause of cancer, like the direct cause of any benign tumor, is unknown.

Cancer seems to be an accumulation of immature cells that grow without law or order and without regard to neighboring tissues. If the cells become mature, it is no longer cancer. Cancer is always local in its early stages and it is in the early stages that a cure can usually be effected. Cancer is not contagious and does not, as a rule, cause pain.

There are many so-called pre-cancerous lesions which can be easily extirpated with a certainty of preventing cancer. There are also many habits of life which predispose to cancer. These things offer one of the most promising fields of action for the American Society for the Control of Cancer.

J. SHELTON HORSLEY.

Prevention of Heart Disease.

A pretty, well set-up, vigorous, young married woman, approaching forty, consulted the writer recently. Her story ran about like this: Her mother died a few years ago; her death was very distressing in its details. Her mother had heart disease, and suffered for days and days with shortness of breath, and had a feeling of suffocation; she was affected with dropsy, and was uncomfortable for months with this; she could not lie down; she could not sleep. Her mother had two sisters. Both of these aunts have recently died of chronic heart disease and both had the long train of harrowing symptoms. The patient wanted to know of her physician, now that she was forty, what she could do to prevent such a death for herself. She had a horror of "dying hard," this way.

How to prevent heart disease is a real problem, but not one incapable of a fair degree of solution. Like other diseases that have been overcome, heart disease can be greatly reduced in incidence and premature mortality. As typhoid fever has been greatly reduced in in-

cidence, and as tuberculosis has been placed under a nation-wide study for its control, so the incidence of heart disease and premature death from heart disease may be attacked with a reasonable assurance of success. It is a cause for congratulation that the eradication of the exanthematous diseases and the oral infections of youth afford us a ray of hope in the search for a means of reducing the number of endocarditis cases which, healed, leave organic defects in the valvular mechanism of hearts and in this way produce "so-called" organic heart disease.

The early diagnosis of syphilis and the adequate administration of the best medical treatment, properly safeguarded by prolonged observation of the Wassermann reaction, is also a means open to modern medicine in its effort to prevent heart disease. But the public may find in the careful physical examination by competent medical advisers the most promising measure for the prevention of death by heart disease.

While, no doubt, as life advances, all the organs of the body are taxed beyond reason, either by repeated chronic undiscovered infections, by persistent and continued habits of eating and drinking or of work, the heart, probably, is the most abused and neglected of all organs. If the teeth begin to give out, the layman visits his dentist and receives skillful repair; if the eyes or ears begin to fail, he visits the specialist; if his nerves, his stomach, his lungs, his liver fail, he does what he can to correct and help the crippled organ. But if his heart is gradually losing power, gradually failing in prodigious mechanical work of making its one hundred thousand odd contractions every twenty-four hours, gradually losing its inherent reserve power, he goes heedlessly along, preferring not to know, not to be instructed in the conservation of heart power.

The prevention of heart disease of the adult life and premature death by cardio-vascular insufficiency, must lie, in its last analysis, at the door of the medical profession. The profession must teach through public press, through its health boards and civic organizations, and through its private instruction to the individual patient, the importance of careful physical examination of the heart in advancing years and the regulation of life to meet the exigencies of the heart.

News Notes

A Personal Letter to You, Doctor.

The Medical Society of Virginia holds this year's annual session in Lynchburg, October 18th to the 21st. If you are not a member you should come and bring your application. If you are already a member, then you should come and take part in the transactions of the organization that represents you, that is, handling matters directly concerning you, that is seeking the advancement of your profession, and you should certainly be here to have a voice in your own affairs and help attend to your own business.

There will be plenty to engage your attention; the program, already mailed to members, guarantees that you will be well fed up on scientific pabulum and the local committee of arrangements proposes to see that you will not otherwise hunger, if you do thirst. Read the program over, see who is coming and what's a-doing. Notice that there are so many papers that two separate sections will be held, the Medical in the Virginian Hotel and the Surgical in the Elk's Club—good places, where you can both see and hear, also be seen and heard, and those are what you come for.

Observe the names of the invited guests, international figures, men with whom you do not want to miss this opportunity to touch elbows.

Don't fail to mention to your wife, your sister, your daughter, and even your mother-in-law, that ladies are expected and will be welcomed by all and entertained by a special committee of ladies, who are busy right now making preparations for them.

Come to the Hilly City, Doc,
Come to the meeting when you feel
October's frosty shock.
Come when the musty seal
That closes the bottle's neck is broke,
And crowded cities hail the stroke,
Come in consumption's fittest form,
And bring your rubber neck along,
Come when the heart beats high and warm
With banquet song, to dance incline,
And thou art desirable!
The cheer, the pone (corn), the yell, the pail, the
beer (near),
And all we know, or dream, or fear,
Of pleasure are thine.

GEO. J. TOMPKINS,

Chairman Local Committee Arrangements.

Are You Going to the Lynchburg Meeting?

We are hoping for a large number of answers in the affirmative to this question, which should now be uppermost in the minds of all members of the Medical Society of Virginia. With the programs recently sent each member were enclosed cards from the local committee of arrangements. They wish you to advise whether you may be expected to attend or not.

Under the heading of *Secretary's Announcement* in this journal, will be found a notice with regard to reduced railroad fares for this meeting. Such of the component societies, as have not sent names of their delegates to this office, should see that they are represented at the State meeting and send credentials with their delegates when they start for Lynchburg.

At the time of going to press, names have been sent us of the following doctors who will attend as delegates from the Medical Society of the State of North Carolina: Drs. B. C. Willis, Rocky Mount; C. V. Reynolds, Asheville; James B. Bullitt, Chapel Hill, and G. Grady Dixon, Ayden. Other states may later send names of delegates.

A large number of reservations have been made and an unusually large attendance is anticipated. Many interesting matters are to be discussed. Be sure to attend and have members of your family accompany you.

Southern Medical Association.

The fifteenth annual meeting of the Association will be held at Hot Springs, Ark., November 14-17, under the presidency of Dr. Jere L. Crook, Jackson, Tenn. Headquarters will be Eastman Hotel. A reduced railroad rate of one and one-half fare for the round trip has been secured for those who attend. This will be worked on the certificate identification plan. If you propose to attend this meeting, write at once to Association Headquarters, Birmingham, Ala., and secure your certificate.

Among the many pleasant features planned for this meeting, apart from the scientific program, will be a golf tournament for the medical championship of the South. Dr. E. R. Smith, who is chairman of the golf tournaments, requests that entries be sent him at the earliest possible moment, to Dugan-Stuart Building, Hot Springs, Ark., for (a) Championship of the South—18 holes low medal score; (b) Handicap championship. All play-

ers are requested to obtain their handicap from home club and present it with par score for home course. Play for handicap championship will be at the same time as the championship round. If it is possible, four-men teams from various clubs or cities will decide the Southern team championship.

Public Health Service Institutes.

In view of the great success of the Institute of the Public Health Service, held in Washington last December, and of the difficulty, due to the conflicting dates of other meetings, of arranging for another on the same scale this fall or winter, the service some time ago decided to try to meet the insistent nationwide demand by arranging a series of Institutes to be held in the larger widely scattered cities of the United States. Locations and dates were so arranged that at least two or three of the meetings should be held within reasonably convenient reach of nearly every resident of the country; and a tentative schedule of courses and of speakers was mapped out. The plans were promptly adopted by many cities, with some variations to meet special local needs. In most cases the Institutes have been planned to run for a week.

The basic courses include from three to six lectures on tuberculosis, child hygiene, nutrition, clinics, and health centers, communicable diseases, non-communicable diseases, industrial hygiene, sanitary engineering, administrative problems, mental hygiene, medical social work, syphilis, gonorrhea, protective social work, and the delinquent. Single lectures will also be given on special occasions. Two Institutes, those at Hot Springs and Chicago, will be devoted especially to venereal diseases. The lecturers who will speak at some or all of the gatherings are the best available in their particular lines in the country.

The Virginia State Dental Association

Has extended a cordial invitation to all members of the Medical Society of Virginia to attend its annual meeting in Richmond, October 11-14, inclusive, at the Jefferson Hotel.

The American Public Health Association

Is to have its semi-centennial celebration in New York City, November 8-18, 1921. Important features of this meeting are the scientific sessions to be held November 14-18, on many public health matters; the health institute, November 8-12; Dr. Stephen Smith, the founder and first president of the Association, who

is now in his ninety-ninth year, will be the guest of honor at a banquet to celebrate his approaching centennial and the semi-centennial of the association; and a historical jubilee volume, *Fifty Years of Public Health*, which was issued about the first of October. Detailed information, etc., may be had upon addressing the Association, at 370 Seventh Avenue, New York City.

Some Richmond Doctors Who Are Home Again.

Dr. and Mrs. J. Allison Hodges are home again after spending the late summer season in the mountains of North Carolina.

Dr. and Mrs. D. D. Talley spent a vacation at Atlantic City.

Dr. M. C. Sytle recently spent a short time attending clinics at Bellevue Hospital, New York City.

Dr. Sidney Trattner returned home about the middle of September, after spending some time in New York and Atlantic City.

Dr. Beverley R. Tucker is home again after a trip to New York. He went as the representative from Virginia, under appointment by Governor Davis, to attend the International Eugenic Conference, at which there were representatives from the United States, England, Belgium, Norway, Sweden, France and other countries.

Dr. and Mrs. Frank Lord, with some friends, took a motor trip in September, visiting several northern cities and Canada.

Dr. and Mrs. Thos. D. Jones were guests of friends in Louisa, Va., last month.

Dr. Hugh J. Hagan,

Roanoke, Va., was a recent visitor in this city.

Dr. H. M. DeJarnette,

Fredericksburg, Va., was recently elected a member of the health board of that city. Two women were also elected as members.

Dr. W. D. Macon

Was recently elected a member of the Charlottesville, Va., Health Board. A woman was also elected a member of the board in this city.

Peking Medical College Opened.

The new Peking Union Medical College, the most complete institution of its kind in the East, was opened the middle of September. The dedicatory exercises extending over the week of September 15-22. Although representative medical men from London, Paris,

Toronto and Tokyo were present, by far the largest number of those participating in the exercises were from America.

Dr. Robert A. Gamble

Has returned to his home in Petersburg, Va., after taking up some special work at Johns Hopkins Hospital, Baltimore.

Dr. E. A. Waugh,

Of Lynchburg, Va., returned home early this month after a vacation of a month spent in Canada.

Government Fighting Venereal Diseases.

In the past two years, the U. S. Public Health Service, in co-operation with the various state boards of health, has made very material progress in organizing a program for combating venereal diseases. There have been 427 clinics established. Of 185,000 clinic patients receiving treatment, 41,100 have been discharged as non-infectious.

From July 1, 1918, through June 30, 1920, there were eleven clinics held in Virginia, at which 10,099 patients received treatment. The Virginia clinics have discharged 4,500 patients as no longer infectious. By the operation of a \$5,000 industrial clinic installed by the Du Pont de Nemours Company, at their Hopewell powder plant, it is estimated that \$150,000 has been saved in increased efficiency.

Dr. and Mrs. Hugh McGuire,

Alexandria, Va., were recent visitors in Richmond.

Dr. Jas. Wood Jordan,

Of the U. S. Public Health Service, has recently been visiting his old home in Ashland, Va., before leaving for New Mexico, where he is now to be stationed. Mrs. Jordan will accompany him. He was recently stationed at Asheville, N. C.

Dr. Moreland R. Irby,

Formerly of Lankin, North Dakota, has located at 200 West Grace Street, this city, where he will limit his practice to eye, ear, nose and throat work. He was a graduate of the Jefferson Medical College in 1908.

Dr. A. L. Wilson

Returned to his home in Lynchburg, Va., the middle of September, after a vacation spent at Siasconset, Mass.

Superintendent at Blue Ridge Sanatorium.

Dr. William Edward Brown, former first assistant to the director at Catawba Sanato-

rium, has been appointed superintendent and medical director of the Blue Ridge Sanatorium, near Charlottesville, Va. He succeeds Dr. Walter C. Klotz, who resigned to accept a similar position at Johnson City, Tenn. In addition to his work at the Sanatorium, Dr. Brown will also instruct students of the medical department of the University of Virginia in the diagnosis and treatment of diseases of the chest.

Dr. Brown, who is a native Virginian, graduated from the Baltimore Medical College and has been engaged in tubercular work for the State Board of Health and for the State Tubercular Association for the past several years. During the war Dr. Brown was an instructor in the army tubercular camp at New Haven, Conn., and studied under some of the most noted tubercular experts in the country. His wide experience and the reputation he has gained by his work throughout the State, notably in diagnostic clinics, eminently qualifies Dr. Brown as the head of this important institution.

Dr. Voshell Heads Orthopedic Department at University of Virginia.

Dr. Allen Fiske Voshell, former resident orthopedist at Johns Hopkins Hospital, Baltimore, at the opening of the present session, assumed charge of the department of orthopedic surgery at the University of Virginia Medical School and Hospital. The addition of Dr. Voshell to the University's staff of surgeons will greatly increase the facilities of its medical school and hospital in caring for the crippled children of the State.

Dr. Voshell is an academic and medical graduate of Johns Hopkins University and specialized in orthopedics under Dr. W. S. Baer, eminent Hopkins orthopedist. He served with the Hopkins Hospital unit in France and since the war has been resident orthopedist at Johns Hopkins Hospital.

Public Health Work of the Red Cross.

Since the American Red Cross entered the field of public health, at the close of the war, it has established 260 health centers, appointed 1,335 public health nurses, given courses in home hygiene and care of the sick to more than a quarter of a million women and girls, and organized nutrition classes and hot school lunches for undernourished children, and courses in food selection for the mothers. Dur-

ing the past eighteen months it has brought relief to the victims of seventy disasters. Its first aid and life-saving work is being expanded.

For all this work the Red Cross needs the support of the American people. It is asking that support through the fifth annual Roll Call, to be held November 11-24. It is asking you, and a hundred million other people in this country like you, to give one dollar to help carry on the work. Isn't it worth a dollar to know that you are doing your share?

Dr. N. E. McDannald,

Until recently of News Ferry, Va., announces that his postoffice is now Halifax, Va.

Dr. and Mrs. H. Graham Stoneham,

Waverly, Va., were visitors in Lancaster County, Virginia, during September.

The Electrotherapeutic Association,

At its recent meeting held in Washington, D. C., elected Dr. Virgil C. Kinney, Wells-ville, N. Y., president; Drs. Willard Travell and A. Bern Hirsh, both of New York City, treasurer and secretary, respectively.

Tonsil-Adenoid Clinics.

As the outcome of the work of the community nurse, two tonsil-adenoid clinics were held in Buena Vista, Va., on September 3 and 17. The services of Dr. George J. Tompkins, Lynchburg, were secured as operator, and he was assisted by Dr. E. P. Tompkins, of Roanoke, and a staff of nurses from Lynchburg, Lexington, and the community nurse of Buena Vista. The local doctors assisted in every way to make the clinics a success by administering anesthetics, after care of patients, etc.

Twenty-three patients were operated on during the first clinic and thirty at the second. As a tribute to the skill of the operating surgeon, it was noted that there were no ill effects resulting from the operations.

Permanent T. B. Clinic in Petersburg.

As a result of the recent demonstration conducted in Petersburg by the Virginia Tuberculosis Association, with the co-operation of the State and City Boards of Health, a permanent tuberculosis clinic will be established there. In the 1,124 persons examined, seventy-one suspicious cases were detected and a number of other cases in various stages of the disease. In addition to these a number of other physical defects were found which might be readily remedied, if taken in time.

Chiropractors not Required to Secure Certificates.

In a case tried in the Danville Corporation Court in September, the jury decided that chiropractors should not be required to secure certificates from the State Board of Medical Examiners, the defense suggesting that they did not practice medicine in the strict sense. The judge further instructed the dismissal of a case against a man who operates a cancer hospital in that city, who is not a regular practitioner in accordance with requirements of the State Board.

In view of these decisions, it seems apparent that something should be done to protect the people against violations of the Medical Practice Laws of the State. This is brought out in a report published in our editorial column, under the caption of "The Menace of the Cults in Virginia."

U. S. Hospital At Yokohama to Close.

It is understood, though not authoritatively stated, that the U. S. Naval Hospital, at Yokohama, Japan, is to be closed for the sake of economy. There have been few patients treated at the hospital in recent years and it has been maintained more as a matter of sentiment. This hospital was established there fifty-three years ago and is situated on a bluff overlooking the business section of the city on one side and the Bay of Tokyo on the other. The only other nation which has a hospital at Yokohama is Great Britain, and its hospital is near the American institution.

Dr. and Mrs. D. J. King

Have returned to their home in Williamsburg, Va., after a visit to relatives in Loudoun County, Va.

Shriners to Build Hospitals for Crippled Children.

Nobles of the Mystic Shrine have planned to establish throughout the United States nine free hospitals for crippled children. For this purpose \$2,000,000 has been pledged, each Shriner being assessed \$2 annually for building and maintenance of the institutions. It was at first proposed to erect a very large hospital in St. Louis, but it was later decided to "take the hospitals to the children" and to establish a \$300,000 hospital in St. Louis, and \$200,000 hospitals in eight other cities throughout the country. The places already selected for hospitals are Shreveport, San Francisco, Portland, Ore., St. Paul, Minneapolis and

Montreal, Canada. Locations for the other three will possibly be in Virginia, the New England States, and Central Pennsylvania.

National Guard Assignments.

Among those recently appointed and assigned to duty with the Virginia National Guard are Dr. Giles B. Cook, of Front Royal, as Major of the Medical Corps, Virginia National Guard, with the 2nd Provisional Infantry, and Dr. James R. Gorman, Lynchburg, as Captain Medical Corps, and assigned to duty with the First Infantry, both to fill original vacancies.

In Danville, Va., Dr. H. A. Wiseman was appointed Major of the Field Hospital Unit, with Dr. Clyde L. Bailey as one of the captains.

Chesterfield Democrats Appoint Physicians on Committees.

At a recent meeting of the Chesterfield County, Va., Democratic Committee, Drs. J. B. Fisher, Midlothian, A. J. Hurt, Chester, and C. M. Hazen, Bon Air, were appointed members of the precinct committees.

Married—

Dr. Junius Francis Lynch and Mrs. Harvey Laird Wilson, both of Norfolk, Va., September 10.

Dr. Raymond A. Vonderlehr, Richmond, and Miss Mary Rich Truitt, of Northumberland County, Va., October 11.

Dr. Waller Nelson Mercer, formerly of this city, and Miss Alice Rogers, of West Roxbury, Mass., October 8.

Society of Anesthetists.

Plans are under way to organize a Southern Society of Anesthetists at Hot Springs, during the coming session of the Southern Medical Society there, November 14-17.

This rapidly growing and now fully recognized specialty has had no Society devoted to its welfare and advancement in the South, while for some years such aggressive and wide-awake organizations as the Interstate Association of Anesthetists, American Association of Anesthetists, and others, are developing the specialty in other sections of the country.

Those interested in such an association are requested to communicate with Dr. W. Hamilton Long, 1922 Deer Park Ave., Louisville, Ky., organization secretary.

Dr. John K. Richardson,

Of the 1921 class, Medical College of Vir-

ginia, has located in this city and is assistant to Dr. Thomas W. Murrell.

Dr. B. B. Wheeler

Returned to his home in Clifton Forge, Va., the latter part of September, after a business trip to Charleston and Beckley, W. Va.

Marshall Lodge Memorial Hospital.

On October 1, the cornerstone was laid for the Marshall Lodge Memorial Hospital, Lynchburg, Va., under the auspices of the Grand Lodge of Masons of Virginia. One section of the new hospital, formerly the Home and Retreat, is about completed. The building is to cost about \$250,000.

Dr. Robert Whitehead,

Meherrin, Va., was the recent guest of relatives in Amherst, Va.

Delegates to American Legion Meeting.

Drs. W. K. Vance, Jr., Bristol, Va., and Chas. E. Dyer, Pulaski, Va., were delegates from their posts to the annual convention of the American Legion, Department of Virginia, in September.

Dr. Vance was also elected delegate from the ninth congressional district of Virginia to the national convention, which was scheduled to meet in Kansas City, Mo., in October.

Dr. J. R. Cain,

Recently of Portsmouth, Va., has gone to Robertsdale, Pa.

Dr. Susan A. Price

Announces that she has left Farmville, Va., and is now at Williamsburg, Va.

Dr. Arthur S. Brinkley

Announces removal of his offices to 307 Professional Building, this city.

Dr. Henry T. Miller,

Washington, D. C., announces the removal of his offices to the Medical Science Building, 1029 Vermont Avenue, Northwest.

Dr. Harris H. Vail,

Of the class of '17, Medical School of Harvard University, announces that he is associated in office and private hospital practice with Dr. Derrick T. Vail, at 24 East Eighth Street, Cincinnati, Ohio.

Dr. R. B. Davis,

Holdcroft, Va., has been appointed one of the brigade commanders for the meeting of the Virginia Division, Sons of Confederate Veterans, which holds its annual meeting in Charlottesville, this month.

Dr. F. G. Anderson,

Who was formerly connected with Catawba Sanatorium, has succeeded Dr. Brown as assistant at that Sanatorium.

Surgeons Wanted for U. S. Public Health Service.

Examinations of candidates for entrance into the regular corps of the U. S. Public Health Service will be held November 14, 1921, at Washington, D. C., Chicago, Illinois, and San Francisco, California. Candidates must be between twenty-two and thirty-two years of age, and graduates of reputable medical schools. They must pass satisfactorily oral, written and clinical tests before a board of medical officers. Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

Good Location.

A four to five thousand dollar practice free to purchaser of fine house, at eighty-five per cent of its value. In up-to-date town. Practice can easily be increased and can use auto all the year. Leaving for two years' post-graduate work in October. It will require \$5,000 cash to handle the deal. This will make a very good location for any specialist where a large hospital is not necessary for his work. Address, "Physician," care this journal.—(Adv.)

Position Wanted as Laboratory Technician.

By young lady with knowledge of laboratory work, blood chemistry, and some bacteriology. Willing to do private or hospital work. Address "V. M.," care this journal.—(Adv.)

Obituary Record.

Dr. Edward McGuire,

A widely known and beloved physician, died at his home in Richmond, after an illness of three weeks. He had suffered from heart trouble for some time. Dr. McGuire was sixty years of age and was a native of Clarke County, Virginia. He graduated in medicine from the University of Virginia in 1886 and later took a post-graduate course at the New York Polyclinic. Upon graduating, he located in Richmond, where he had since made his home.

He was a member and ex-president of the Richmond Academy of Medicine and Surgery and had been a member of the Medical Society of Virginia since the year of his graduation. He was also identified with numerous medical societies throughout the country. He was connected with the University College of Medicine throughout its career and, upon consolidation of the schools, became a professor in the Medical College of Virginia. At the time of his death, he was emeritus professor of clinical medicine in this institution.

He is survived by his widow, who was Miss Mary McGuire, a daughter of the late Dr. Hunter McGuire; by one son, Dr. Hunter McGuire, who has recently located in this city, and by a sister. Practically all of Dr. McGuire's professional work was as a "family" physician and there are many friends among his clientele, as well as throughout this State, who will feel his loss keenly.

Dr. William A. Strother,

Whose home was just outside of Lynchburg, Va., was shot and killed at his home, on the morning of September 24. He had a large practice in Bedford County. Dr. Strother was thirty-eight years of age and graduated in medicine from the University of Virginia in 1905. He had for some years been a member of the Medical Society of Virginia.

Dr. Richard Addison Powell,

Who graduated from the University College of Medicine, Richmond, in 1907, and later served an internship at St. Luke's Hospital, this city, died at Johore Bahru, India, August 14, aged thirty-seven years. To the time of entering the British R. A. M. C., during the World War, he was connected with the staff of Highsmith Hospital, Fayetteville, N. C. At the time of his death he was connected with the staff of the English Hospital, at Johore Bahru, with the rank of major.

Dr. J. F. Wright

Died at his home in Keezletown, Va., June 26, 1921, at the age of sixty-eight years. He graduated from the College of Physicians and Surgeons, Baltimore, in 1876, and was for some years a member of the Medical Society of Virginia.

Dr. John D. Smith,

Of Miller School, Va., died August 19, at the age of seventy-one years. He was graduated from the University of Maryland, School of Medicine, in 1874 and had served forty years as physician to Miller School, Va.

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Original Communications

DIVERTICULITIS OF THE SIGMOID.*

By WILLIAM J. MAYO, M. D., Rochester, Minnesota.

Every medical practitioner of experience occasionally has met with a person, more often in middle or later life, and usually, but not always, obese, who complains of a painful, indefinite, left sided abdominal tumefaction due to diverticulitis of the sigmoid. The symptoms, as a rule, are subacute and accompanied by a moderate increase in temperature, seldom above 102. Abdominal distention and gas eructations are early symptoms. Usually, on deep palpation along the course of the colonic sigmoid, an ovoid, somewhat tender mass can be made out. After a few days the pain, tenderness, and swelling subside, and in the next two or three weeks the patient slowly recovers. Often a history of previous attacks can be elicited. Unfortunately, all cases do not end so pleasantly. Instead of a material decline in the size of the tumor and the resulting symptoms, the increased temperature continues, the mass becomes larger and more and more painful, and, in the course of several weeks, attaches itself to the bladder, to another portion of the intestine, or to the abdominal wall, and a slow infectious process produces a large quantity of foul pus of a feculent odor, which is spontaneously evacuated, and the patient may recover completely.

It is further unfortunate that the abscess which has its origin in diverticulitis of the sigmoid may result in a persistent fistula communicating with another viscus, often the bladder. In chronic cases the distress in the bladder from the discharge of gas and feces may inca-

pacitate the patient, the amount of disability depending largely on the location of the fistula.

When the infection involves some other portion of the intestinal tract, obstruction of the bowel, partial or complete, is not at all uncommon, and may lead to the necessity of operating at an unfortunate time for the relief of an acute intestinal obstruction due to localized peritonitis. If the peritonitis threatens to become general, the treatment should be that advised by Ochsner, many years ago, which we carry out as follows: The stomach is emptied; fluids (3 to 5 per cent glucose), are given by rectum by the Murphy drip or subcutaneously, 2000 to 3000 c.c. every twenty-four hours; unguentum hydrargyri (blue ointment), 1 dr., is rubbed into the skin of the abdomen; large thick hot fomentations are applied to the entire abdomen and changed frequently; food and cathartics are withheld, and sufficient opium is given to induce rest and quiet. As a rule, these patients can be tided over the acute state to the chronic stage.

The abscess cavity may, in the course of time, contract and, if the location of the fistulous communication is favorable for drainage, the patient may recover completely, but the prospects of complete healing of an interintestinal fistula without sequelae are not good. The pressure of the gas and fluid in the intestinal loops may be sufficient to divert intestinal contents into the abscess cavity with extension of the ulceration, so that occasionally a number of intestinal loops become involved with multiple communications between the adherent loops, the old abscess cavity, and the sigmoid. Eventually these imperfectly draining fistulous cavities may establish communication with the bladder, or penetrate to the surface of the abdomen. I have operated occasionally in such a case and found as many as six intercommunicating intestinal fistulas with one or more openings into the bladder. During the slow, tedious process following the evacuation of the abscess and the formation of

*Read by invitation before the fifty-second annual session of the Medical Society of Virginia, in Lynchburg, October 19, 1921.

the fistula, the patient may not be confined to bed, but is always seriously incapacitated.

This brief discussion of the natural history and average course of diverticulitis of the sigmoid will serve to call your attention to a group of cases which were for a long time misunderstood, or at least little understood. Complete proof of the existence of acute diverticulitis was not established until 1907, when I presented a paper before the American Surgical Association, written in association with Drs. Louis B. Wilson and Herbert Z. Giffin. The clinical and pathologic findings in five cases in which resection of the affected sigmoid had been performed were reported. The pathologic study of these five cases cleared up the subject. The late Reginald Fitz, who was present at the reading of the paper, remarked that he had been present at the birth of a new disease, and that although he and others had often seen diverticula in the sigmoid and suppurative processes in other cases which were supposed to have such origin, never before had positive proof of it been presented. The first case cited in our original article is so typical that I present it herewith:

In 1896, a well-nourished man, aged fifty-one years, presented himself at the Clinic with an internal fecal fistula into the bladder. The history, in brief, was that some months previously he had been seized with pain and soreness in the left inguinal region and a tumefaction had followed. After a number of weeks of illness, a large amount of foul pus was evacuated by way of the bladder. The tumor disappeared, but from that time there had been more or less escape of gas and feces into the bladder. A diagnosis was made of probable appendiceal abscess with secondary internal fistula. On opening the abdomen the appendix was found to be normal, but in the sigmoid flexure of the colon was a sausage-shaped tumor of considerable size imbedded in a mass of adhesions in the pelvis, and a fistula between the sigmoid and the bladder. These organs were separated, the opening into each viscus sutured, and free drainage introduced. The suturing proved to be imperfect and a combined urinary and fecal fistula to the surface was the result. The opening into the bladder healed in a few weeks but, when the patient was last seen, two years after operation, the fistula occasionally discharged gas and hard particles of feces (Figs. 1 and 2).

I hasten to assure you that we have no desire to claim priority in reporting this condition, particularly since disputes concerning priority have been said to be evidence either

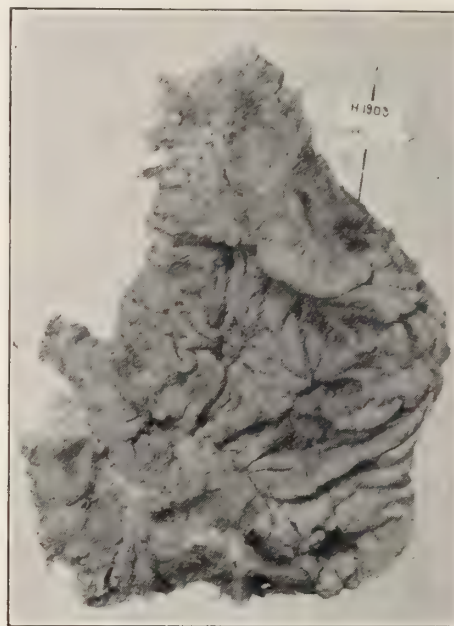


Fig. 1. (Case H1903). Diverticulitis. Sigmoid laid open longitudinally. A diverticulum containing a sloughing ulcer is seen at the lower right hand; another is sectioned near the label needle.

of a feeble ambition or a small mind. Graser, in 1900, was the first to describe the disease, and he had an excellent conception of its pathologic possibilities. Beer, in 1904, and Gordinier and Sampson, in 1906, published illuminating papers on the subject. These papers were rapidly followed by those of Telling, Plummer, and others. Brewer's valuable contribution to the acute phases of the condition was presented to the American Surgical Association at the meeting, to which I have referred, in May, 1907.

It should be noted that I am discussing only the acquired type of diverticula of the sigmoid, that is, the type in which the mucous membrane of the gut pouts through little defects in the submucous and muscular coats of the intestinal wall, the exposed mucous membrane being covered only by peritoneum. The distinction between acquired diverticula and true diverticula is, of course, quite clear. True diverticula are covered by all the intestinal coats; usually they are congenital and seldom cause symptoms. An interesting interpretation

of the etiology and pathogenesis of acquired diverticula is contained in a paper published by McGrath, in 1912. A certain practitioner,

and close the opening in the sigmoid by catgut suture, leaving in place a Penrose type of rubber drain. While a small fecal fistula almost

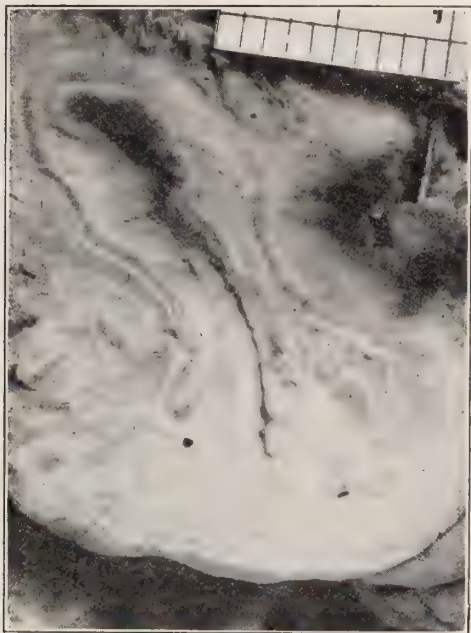


Fig. 2. Diverticulitis. Enlarged view of sectioned diverticulum shown in Figure 1. Note muscularis in wall, occluded lumen, and inflamed submucosa.

who is also an automobile enthusiast, has referred to acquired diverticula in the colon as "blowouts of the inner tube." In the distal extremity of these little pouches will usually be found hardened balls or masses the size of a small pea, which are composed of saponified intestinal secretion and vegetable fibers derived from the food refuse. The neck of the sac is usually smaller than the average lumen, and, under influence of infection, the resulting edema causes the opening into the sigmoid to become completely closed, thus retaining inflammatory products in the diverticulum. The retained secretion in turn penetrates through the mucous membrane and the peritoneal covering into the abdominal cavity, usually at a point previously protected by adhesions, and a localized abscess may result. Cases have been described in which rupture has taken place into the free peritoneal cavity, causing a fatal acute general peritonitis, but I have never observed such a case.

In some cases of diverticulitis in which I have been compelled to operate in the acute stage, I have been able, after emptying the abscess, to remove the necrosed diverticulum



Fig. 3. (Case 16736). Peridiverticulitis. Inflammatory mass surrounding sigmoid dissected away, showing outer ends of numerous diverticula protruding through the muscularis. Several diverticula contain enteroliths.

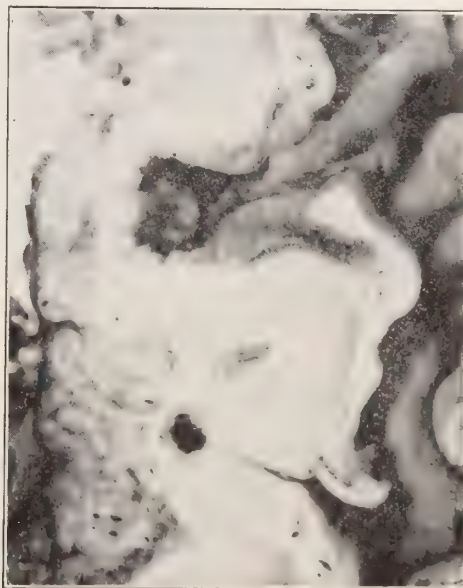


Fig. 4. (Case 19395). Peridiverticulitis. Diverticulum and one point of defective musculature.

always forms, it heals readily. In subacute cases I have sometimes found that removing the offending diverticula is effective and safe, and the patients had no further trouble. (Figs. 3 and 4).

The similarity of acute diverticulitis and acute appendicitis, with the exception of the variable difference in size, is marked. As a rule, there is just sufficient time after the beginning of the acute process in the diverticulum to permit encapsulation, the epiploic tags of the sigmoid itself, in conjunction with the omentum, furnishing an effective temporary barrier as first aid against the spreading of the infectious process, herein differing markedly from acute gangrenous appendicitis. In the average case only one diverticulum is involved,

many inches contain scores of diverticula. (Fig. 5). Diverticula are not by any means confined to the sigmoid, although the sigmoid is the most frequent location of the process. C. H. Mayo has pointed out that perirectal fistulas that sometimes extend for a number of inches up one or the other side, or posterior to the rectum, usually have their origin in an acute infection of a rectal diverticulum. Diverticula may be found in any or all parts of the large intestine and may even be confined to a certain portion, such as the transverse colon, without demonstrable lesions in the sigmoid. We have resected parts of the colon for diverticulitis in seventy-eight cases; sixty-four of these were in the sigmoid.

The course of diverticulitis of the sigmoid, however, may not be acute, but rather subacute, or, quite commonly, an acute attack may be followed by chronic induration of some portion of the sigmoid, giving rise to a left hypogastric tumor, which may remain for weeks or months, and lead to a certain amount of chronic colonic obstruction which may eventuate at any time in an acute obstruction. In some cases acute obstruction is the first symptom of chronic diverticulitis which has progressed to stenosis without the knowledge of the patient.

Another source of worry is the determination of whether a chronic tumor in the abdomen is chronic diverticulitis, carcinoma, or, as is often the case, carcinoma developing on diverticulitis. Wilson, in 1911, discussed diverticula of the lower bowel and called attention to their relationship to carcinoma. In four of the fifteen cases which he reported at this time from the Clinic carcinoma had developed. It is reasonable to assume that infection and irritation by hardened fecal masses in diverticula are the cause of the chronic irritation and precancerous change. The only known fact of importance in the etiology of carcinoma is its relation to chronic irritation. The term precancerous is used to denote certain cell changes taking place in the area of chronic irritation which, if found in connection with invasion of the tissues, would be typical of carcinoma (Fig. 6).

Giffin, in 1912, reported that for every sigmoid resected in the Clinic for diverticulitis, seven had been resected for carcinoma. Our statistics show that in 490 resections of the colon for carcinoma, 248 were for growths of the sigmoid. It has often been pointed out



Fig. 5. (Case 44726). Symptomless diverticula of the sigmoid.

others being affected later by contiguity and from the peritoneal side in the progressing abscess rather than from the mucous surface.

To the coming of the X-ray and its marvelous portrayal of pathologic conditions to which we had previously been blind, we owe much of our knowledge of the frequency of acquired diverticula. It is not at all uncommon to find, in a colon properly filled with barium, sections of the gut in which from a few to

that carcinoma of the colon, especially of the sigmoid, may progress very slowly. Cases have been reported in which a colostomy was made for the relief of obstruction due to sup-



Fig. 6. (Case 28835). Longitudinal section through sigmoidal wall, showing carcinoma containing remains of diverticulum.

posed carcinoma; the patients lived for a number of years and then died of carcinoma of the sigmoid, a fact which apparently proved that the condition had been carcinoma from the beginning and that the natural course of the disease had continued for eight or nine years. This inference is unwarranted. We have operated in several cases of this type and, on resection of the growth, found carcinoma developing on old diverticulitis. In tracing the early history, it could be seen that the diverticulitis had been the cause of the obstruction for which the colostomy had been made, and that the carcinoma had developed at a much later date as the result of chronic irritation. In one rather remarkable case, a supposed carcinoma of the sigmoid, associated with a carcinoma of the transverse colon, was found on exploration. I removed the left half of the transverse colon, the splenic flexure, the descending colon, and part of the sigmoid, uniting the remainder of the transverse colon to the lower sigmoid. When the specimen of the

sigmoid was unraveled, it proved to be involved by diverticulitis for six inches. Carcinoma had developed on one diverticulum which had become adherent to the transverse colon, and had spread into the peritoneal, muscular, and submucous coats of the transverse colon without penetrating the mucosa. There was no carcinoma in the sigmoid, the malignant process being confined strictly to the one diverticulum and the transverse colon. It is usually possible to differentiate diverticulitis and carcinoma by the roentgen ray, since in carcinoma a filling defect will be found in addition to the less reliable findings of blood, pus, and mucus in the stool. With the sigmoidoscope we have been able to distinguish carcinoma associated with diverticulitis of the lower sigmoid and rectosigmoid, but we have not been able to demonstrate diverticula in the colon in this manner.

SURGICAL TREATMENT.

The treatment of diverticulitis of the sigmoid depends on many factors. In acute cases, especially if the patient is old, obese, and a poor risk for operative procedures, the treatment should be tentative. If pus collects and becomes well encapsulated, it should be evacuated instead of waiting for spontaneous evacuation, with the possibility of the formation of a fistula and its attendant evils. If more radical treatment becomes necessary, it can be postponed to a later and more favorable time. If acute obstruction results, a colostomy can be made as close to the obstructed point as is convenient, so that later the stenosed portion of the gut and the colostomy may be excised through the same incision simultaneously, or, as advised by Stiles, a cecostomy can be made for temporary relief.

If the patient comes for the relief of internal fistula, especially one communicating with the bladder or another part of the intestine, a serious problem confronts the surgeon, the seriousness being proportionate to the number of internal fistulas and their location. I know of no more trying operation than some of this character which I have performed. In several instances, I have dissected out multiple interintestinal fistulas communicating with the bladder and carefully sutured the bladder and each intestinal opening and, after some days, leakage to the surface has followed the line of drainage, with a temporary discharge of feces and urine. However, these wounds have eventually healed.

A very excellent technical maneuver in such cases was first suggested, I believe, by C. H. Mayo. This consists of completely separating the colon from adherent intestines and bladder, and, after suturing the fistulous openings, bringing the omentum into the operative field. An opening is made in the omentum through which the sutured portion of the sigmoid is brought to the surface of the abdomen, and attached by a few sutures, thus throwing the omentum between the defects in the colon and bladder and adherent intestines.

It is usually wise to resect the chronic stenotic tumors of the sigmoid which may result from diverticulitis with end-to-end anastomosis in one or two stages. Here again is demonstrated the value of drawing the anastomosed area through an opening in the omentum so that it is completely blanketed, except at the point of danger of suture leakage, and of attaching the dangerous area into the incision with a few catgut sutures. We usually carry a little vaselin down to the suture line, or insert a few strips of rubber to maintain communication with the surface. It is surprising how often there is leakage in some point in the suture line of the anastomosis, but, managed in this manner, it is rendered harmless instead of causing, perhaps a fatal, peritonitis.

In some cases it is best to perform the two-stage operation of Mikulicz and Braun: The involved part of the sigmoid is brought outside the body, and sutured into the incision in the abdominal wall and allowed to heal in. The diseased portion is cut away flush with the skin, leaving the two ends of the sigmoid projecting like a double-barrelled shot-gun. If there is no acute condition, such as obstruction, the projecting sigmoid is not cut away for a few days to permit firm adhesion between the attached sigmoid and the abdominal wall. After from six to fourteen days, a pair of forceps is applied, one blade in each intestinal opening, and the intervening tissue clamped tightly and left until the forceps have necrosed through. Several weeks later the ends of the colon are sutured without opening at the free peritoneal cavity as a colostomy would be closed. If the diverticulous tumor is low in the pelvis, the Balfour method of resection and anastomosis may be employed. I quote from Balfour's original paper in describing this effective and safe procedure.

"The patient is placed in a high Trendelen-

burg position and a long middle line incision is made between the umbilicus and the pubes. The intestines are carefully packed off above, leaving only the lower sigmoid exposed in the pelvis. Liberation of the affected portion of the bowel is effected by lateral incisions through the peritoneum, particularly through the outer leaf of the sigmoid, and a semilunar incision is made along the base of the bladder, connecting the two lateral incisions. If there is a suspicion of malignancy, careful dissection is made of all the fat and glands as high as the abdominal aorta, the hollow of the sacrum being swept clean. The inferior mesenteric and middle sacral arteries are ligated at proper points. Two pairs of forceps are clamped on the bowel at a suitable distance below the tumor and two on the proximal side; the necessary amount of sigmoid with the tumor is excised and the cut ends sterilized. A one-half to three-quarter-inch rubber tube is passed into the lower segment of bowel until the end protrudes through the anus; the upper end with lateral eye is inserted into the proximal end of the sigmoid to a distance of about four to twelve inches, usually as far as the descending colon. It is secured to the cut end of the proximal sigmoid by a transverse catgut stitch. Traction is made by an assistant on the end of the tube projecting from the rectum, until the cut ends of the sigmoid and rectum meet, and the anastomosis is made by interrupted through and through chromic catgut sutures with careful coaption of the mucous membranes. Traction is again made on the tube sufficient to accomplish one-half inch intussusception; this is aided by a few forceps on the distal fragment to steady it, and a second row of seromuscular sutures is inserted. Sometimes the parts are so deeply situated that the second row of sutures cannot be well placed; nevertheless, the ultimate results have been good. The defect in the peritoneum behind is remedied by sliding the peritoneum and suturing, and finally the omentum is drawn down over the anastomosis and, if necessary, secured by a catgut suture. The abdominal wound is closed in the usual manner. If drainage is necessary it is provided by two rubber wicks carried down, one on each side of the anastomosis, into the hollow of the sacrum, and brought out in the lower part of the abdominal incision. The rubber tube in the rectum remains in position for from six to ten days, until the catgut hold-

ing suture is absorbed. The abdominal drains are loosened on the fourth to the sixth day, but usually not removed before the eighth to the tenth day, because a late temporary fistula will sometimes occur."

Nearly one-third of the cancers of the sigmoid which we have removed have had their origin in diverticulitis. In some of these cases, until the specimen has been examined microscopically, it cannot be determined whether the condition is chronic stenosing diverticulitis, carcinoma, or a combination of both. Resection, therefore, in the chronic tumor-forming type of diverticulitis must often be performed as would be done for carcinoma of the sigmoid. The death rate following resection for diverticulitis of the sigmoid has been approximately ten per cent., about the same as for cancer, and the radical operation is, therefore, not to be lightly undertaken.

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MODERN MEDICINE—SCIENTIFIC SPENDTHRIFT.*

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At the end of each fiscal year, prudent business men are in the habit of taking stock of their possessions, not so much from any desire of gratification to be derived from the discovery of accomplished results as from the wish to know their true condition and to determine how they may wisely conduct their future operations. In the same spirit and for a like purpose it is well that estimates should be made from time to time in the case of the sciences and the professions. Speaking as I do for medicine in its narrower sense (as contrasted mainly with surgery), I confess there is some little tincture of pride in being able, before such a mixed audience of laymen and physicians, to bring forward some of the achievements in that branch of our profession which I represent, because it is everywhere apparent that the silent, undramatic advancements of medicine are less appreciated than those of us who are deeply concerned may properly desire. Whatever of satisfaction I derive from a retrospective survey of medical progress is, however, a mere by-product while my real purpose is to establish the theme that modern medicine has grown exceeding rich and has, unfortunately, in some ways fallen into the habit of a spendthrift.

Let us look backward then, that we may have no uncertainty in the matter, no farther backward than the date some thirty odd years ago, when your speaker was launched into his profession on a day that seemed to him the very end of long and arduous study but which his maturer judgment now recognizes as, indeed, his Commencement Day. Fortunately, the intervening years have not dimmed the lustre of the stars that graced our medical

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firmament nor dulled the memory of their achievements. Those were the days of activity of Fitz and Edward Janeway, of Da Costa, and Weir Mitchell, of Pepper and Osler, of Alfred Loomis, and Wm. H. Draper, and a host of others, the very mention of whose names conveys to the mind of every medical man an instantaneous photograph of the best of medicine of that time. Who among us that remembers them will fail of the impression that these were great clinicians—men who knew disease because they had studied it faithfully at the bedside and, without many of the aids that modern science has given us, had so trained their powers of observation and so diligently cultivated their domain that the natural history of disease in its obvious manifestations was to them more familiar than it is, alas, to most of us. I remember that Babes, a French bacteriologist, in speaking of the great Dutch naturalist, Leeuwenhoeck, and his simple microscope, with which he was the first to discover micro-organisms, says: "I know not which to admire most, the simplicity of the instrument or the magnitude of the discoveries." And so we may say of the clinicians of a generation ago that their attainment of knowledge was out of all proportion to the means at their disposal. In these days of exactness and exactitude there is little tolerance of speculation and theory; the spirit of the times demands demonstration, but are we not crushing something that goes to make the soul of genius? Lord Kelvin has told us that every great scientific discovery was in the first instance a product of imagination. A Darwin or a Roger Bacon stripped of imagination would be as sterile as a Professor Teufelsdröck, and, in our zeal to eradicate forever an ancient heritage of unsound speculation in favor of exact science, have we not a little too much discouraged trained imagination? I know I lay myself open to the charge of being that modern incarnation of anathema, a reactionary and, therefore, hasten to confess with or without shame, as may best appear to any one of my hearers, that I glory in being a conservative and in believing that a study of the achievements of the past and of the lessons of history may serve a useful purpose in medicine as in all other progressive movements.

"Sappho survives because we sing her songs,
And Aeschylus because we read his plays,"

And those of us who would form a just estimate of conditions of this day cannot neglect the wisdom of the masters who have gone before. The era of great clinicians has passed but, unless I misread history, a revival is due. Nature moves in periods. The testimony of the rocks bears witness of successive eras sharply distinguished and with frequent returns of strata similar to some that had gone before. So, in the realm of human thought, periods of accumulating knowledge have often been followed by stationary periods of constructive generalization. The tree glories in its leafy abundance during the Summer and puts it aside in the Winter, while the more essential woody accumulation is hardened into the solid trunk.

When one surveys the separate items of knowledge that have been amassed in our modern medicine during the last three decades and studies the general tendencies of advancement, one may feel that the movement in the direction of more diversified scientific facts and methods must of necessity go on without halt. Though it is clear that rapid increase in knowledge is usually the result of new methods, improved implements or technic, and other departures, and though it is evident that the product of such new means and methods will some day reach a limit—he would, indeed, be a daring man who would assert that any arrest in the splendid achievements of medical science lies immediately before us.

The impetus has been given, diverse methods of investigation deriving substantial aid from cognate sciences—chemical, physical and electric—are opening new veins of knowledge at every turn and we shall not soon, I hope, reach any halt in progress and must expect ever-increasing complexity and comprehensiveness in our medical science. Some day, perhaps, the possibilities of our present methods will be exhausted, but that is far in the future.

It is apparent, however, that in the field of medical practice some readjustment is even now necessary to make more readily available the new facts of science by methods that will not exhaust the patient and the agencies of relief. What I have in mind will become more clear after a brief review of the medical advances that have contributed to what we call modern medicine.

If we undertake a survey of the substantial medical achievements of the last three de-

cases we shall, without hesitation, select the story of infectious diseases for our first consideration. Bacteriology and its derivative, or the modern knowledge of infectious diseases, date from the early 80's of the last century. Founded on the epoch-making investigations of Pasteur, the phenomenally rapid accumulation of detailed information is attributable to the establishment of novel methods of investigations—those of Pasteur and later those of Koch—and their application by hosts of followers to different conditions. The accumulation of knowledge seemed so bewilderingly rapid and varied as to excite amused incredulity on the part of those who could not understand how micro-organisms or germs could be so suddenly recognized in all kinds of diseases. To them it appeared the latest fad and one likely to die out soon. I mention this now simply to emphasize a point already alluded to, that rapid and often very extended increases in knowledge are mainly due to the discovery of new methods of investigation. Men could speculate regarding the germ origin of disease or could even study germs themselves under their microscopes, but, until the new method of isolation and cultivation was found, no definite progress could be made. It would be useless to catalogue all the infectious diseases in regard to which we have acquired new knowledge; the index of the first available medical text-book will serve as well. You may include them all. But there are certain diseases whose study has given practical results of such enormous importance that the world must stop to note. Take malaria as an example. How well I remember the old time discussions of paludal miasms and dank vapors from swamp lands and then how amazed we were and, perhaps, how incredulous, when Laveran showed us the malarial germ. It was not long before Findlay's surmise of mosquito transmission was proved by Ross. It is interesting as an example of the keenness of older masters to note that Benjamin Rush, in his discussion of bilious remittent fevers (malarial?), says it was notable that the cases were most abundant in certain sections near the river "where the moschettoes did most abound." How dry as dust is the mere statement that the germ of malaria is known and that a certain type of mosquito serves as its carrier, but what a world romantic interest lies between the French army surgeon's studies in Algeria, the

investigation of the Italians on the Campagna, of Ross in the heart of Africa, and the final triumph of Gorgas at Panama. In a material sense, the same period extends from the disastrous Isthmian defeat of the French under DeLesseps to the victory of Goethals made possible by Gorgas.

The history of yellow fever is equally thrilling and the eradication of this disease in large sections of tropical and subtropical America is one of the great achievements of modern medicine. What the future story of mankind may be as a result of such elimination of devastating scourges that have sapped the life of whole nations, it is too early to see, but we may, with Mr. Jones, go back to the history of ancient Greece for collateral evidence. In an illuminating study he has made clear that the downfall of that ancient and brilliant civilization was due less to the conquering hosts of Persia or internal warfare than to the invasion and dissemination of malaria.

Within the memory of most physicians and laymen in this audience we have reached the practical possibility of eradication of another great scourge—typhoid fever. The discovery of the germ, followed by more complete knowledge of the manner of its dissemination, the significance of "human carriers" and, finally, the method of protective inoculation, are the milestones in the course of events while in its broader recognition among all men the story is told by a comparison of the typhoid fever of Chickamauga in 1898 and the absence of typhoid in the armies of the world in 1918, and with equal force by a comparison of the mortality statistics of all our great municipalities of today and those of thirty years ago.

And yet another disease of world wide prevalence must arrest our attention, for its earlier recognition, its more accurate and positive identification, the discovery of means to control, its dissemination and its modern treatment, have made possible the steady undoubted decline in the death rate of the most widespread of all human scourges—tuberculosis. From the discovery of the germ by a country doctor, Robert Koch, and the demonstration of its communicability by a French physician, Villemin, to the modern campaign for eradication of the disease involving expenditures of many millions and the interest of the whole world, there stretches a hard beaten path deviously winding through dense forests, broad

plains, and deep valleys and up occasional high peaks from which the highest peak of all is seen beyond, though not yet attained. Who shall say that the ultimate peak—the eradication of this great plague—will not be soon accomplished?

These are but four of the great achievements of modern medicine and I need only allude to others in a word or two. It was but yesterday that our American Commission made such short work of the frightful epidemic of typhus in Serbia, by using modern methods, and we know how more than once, in recent years, both typhus and the pestilential plague have tried by stealth to invade this country only to be met and defeated at our seaport entrances.

Protective inoculation has accomplished much, if not quite so conspicuous results as in the case of typhoid fever, in cholera, in plague and in various less important infections and has even shown somewhat hopeful indications of success in pneumonia—that most extended and most dreaded of acute infections.

Antitoxic sera have achieved so much in the prevention and treatment of diphtheria and tetanus that these diseases have lost most of their terror for the pediatricist and the military surgeon, and who of us has failed to appreciate the striking results of serum treatment in epidemic meningitis. But lest I weary you, I shall leave the rest of the story of bacterial diseases to your own reflections. Suffice that I add, the physician of today has before his mind an array of facts about infection and immunity, about general infection and local infection, about prophylaxis, anaphylaxis and cure, about serum and vaccines, and many other details, that are enough to crowd the most capacious cranial cavity.

But the story is only half begun. While those engaged in bacteriological investigations and in epidemiology have been reaching the wonderful results so briefly sketched, internists occupied with other methods have opened up great mines of information in other directions.

Those inclined toward chemical methods have given us entirely new conceptions of certain organic and nutritional diseases, notably Bright's disease, diabetes and gout, and have made distinct headway toward the solution of the riddle of their origin and cure, though at present a modest estimate perhaps constrains me to admit there are lacking gaps

that yawn quite deep and dark. In the daily study of these diseases, chemical methods are as necessary as a physical examination is essential in diseases of the heart and lungs. It would be out of place to detail the many and varied methods of chemical study of the blood and the excreta, of the inspired and expired air and of the very tissues themselves that have served to establish for us what we now know as the science of nutrition, but what scientist would question the debt of gratitude owed to the nutritional chemist by Mr. Hoover and all others who have sought to preserve a spark of life in the starved unfortunates of Europe?

Those who have been interested in physical or mechanical means of study have given us new knowledge regarding the heart and circulation, diseases of the digestive tract, the bronchial tubes and lungs, and the whole urinary tract.

In the study of the circulatory diseases, largely through the dogged persistence and sound sense of a country physician (still happily living), Sir James MacKenzie, we have learned the use of methods of graphic record of the pulse beats in the wrist and neck and of the heart beat itself, and, what is more important, have gained from these methods an entirely new appreciation of the meaning of disorders of the heart action. Following hard upon this great achievement, we have been enriched with implements for easily estimating the grade of blood pressure in our patients and an electrical device (electrocardiograph), which supplement and carry forward beyond MacKenzie's observations the intimate knowledge of the heart action by photographic records of the action currents in human subjects.

Let me pause for a moment here to make but one comment on a topic suggested by the story of cardiac disease and the electrocardiograph—that wonderful instrument that reproduces all the varied streams of electric stimulus that in our heart muscles spell life or death—a topic that is controversial and densely charged with dynamite and asafœtida—the topic of what use has experimental medicine or animal experimentation been in all this. There are two assertions that I would recommend to each party in the controversy, and I suggest that they contain all that is essential—the rest being mostly abuse and waste of time. To those who deny the use of animal experi-

mentation, I recommend: first, "I see no proof that your experimentation led to these wonderful discoveries," and second, "If you think you have proved to me the wonderful value of your wonderful experiments, I need only add that my attitude toward the results is the same as that of many to the asserted roundness of the world, that it is not true." To those favoring animal experimentation, I would advise: first, like Socrates of old, I may as a philosopher admit that "anythnig is possible and all the glories of modern medicine might then have been achieved in some other way," but second, "It happens that these wonderful discoveries were not discovered in any other way, but in just this way—and all honor to those whose names are found in that glorious company of benefactors."

Optical and mechanical means have been devised for exploring the oesophagus and stomach and the urinary tract almost to the kidney itself, while my wizard colleague, Chevalier Jackson, is lifting stray collar buttons, nails and safety pins from careless peoples' bronchial tubes and lungs—*citius nictu*, or at least, *citius dictu*, for he rarely speaks even if perforce he must occasionally wink.

And lastly, let me call to your mind, for every layman knows its triumphs, what a whole continent of unexplored territory the X-ray has opened up to us—not alone yielding rich results in diagnosis, but in treatment as well.

By an assortment of these various methods of study, we have made great progress in the sure diagnosis of many obscure diseases and of many unsuspected conditions not yet manifest in troublesome symptoms, we have obtained a far wider knowledge of the interrelations of various conditions, means of estimating the functional efficiency of organs, and have been transported a long way on the road to an understanding of the fundamental causes that lead to many maladies now wholly obscure. It is to the same modern methods that we have recently had opened to us some glimpses of a group of diseases affecting or originating in our ductless glands that may ere long be found essential in the development of personality as well as disease, though at present their too ardent study is a little liable to create some derangement of personality.

I realize that much of what I have alluded to is but dry hearing and I apologize on be-

half of my predecessors and friends, the internists, for having discovered so much that I needs must bore you to extinction with a mere recital of the headlines. For myself, I offer no apology at all for it was necessary that I should bring you to the last extremity of fatigue that you might be a little sympathetic with me and the other victim concerned in this discourse—the unfortunate patient who is to have unlimbered and trained upon him all the batteries of diagnostic modern medicine and all the chemical warfare of carboniferous derivatives and sero-colloidal cures.

It seems to me as if Voltaire may have had great prophetic vision of modern methods, for he is reported to have said to the surrounding physicians and friends: "Leave me friends to die in peace."

Consider for a moment what a diagnosis entails: blood count, blood culture and blood chemistry, a gastrointestinal X-ray study, and two or three local X-ray studies as well, the laboratory testing of all the secretions and excretions and exudations that can be got without much effort, or by gastro-duodenal tubing, ureteral catheterization, and by puncturing the serous cavities; polygraphic and electrocardiographic tracings of the heart beats, estimation of the blood pressure, studies of the respiratory air and determination of basal metabolism, examination of the stomach contents at a fixed period after a meal and fractionally every few minutes for a span of two or three hours, a special examination of the nose and throat, the oesophagus, the larynx and the eyegrounds, careful determinations of the nervous reflexes and the integrity of the sensory nerve, pelvic examinations and cystoscopy and, if the strength and splendid normality of the individual has endured all this, perhaps, it might be well to add a few psychological tests and a little intensive investigation of his living relations and his forbears. Think of the time consumed, of the discomfort and exhaustion and of the extravagance of cost involved in such a program when it is unnecessary!

Had I not at wearisome length proclaimed my more than ordinary appreciation of that which modern medicine has given us, nothing could have persuaded me to array in this fashion one of her glaring weaknesses. We all know the ostentation and the excesses of some of our newly rich and we have even seen newly erected nationalities try the patience of their

warmest supporters by the arrogance of sudden power. The spendthrift nature flourishes with greatest luxuriance when acquisition has followed mushroom growth and where no controlling influence of sober habit holds it in check. It is but fair to say that my intimations of excess do not apply to those difficult cases in which only extended search will uncover the solution nor to the systematic intensive study of cases in well equipped institutions devoted alike to medical research and practice. Many surprising discoveries have been made where systematic application of a certain method was made to many varied conditions. My thoughts are rather devoted to routine work.

I am no discoverer nor innovator in suggesting that the profligate abuse of modern methods needs our earnest and thoughtful consideration. Many who have not especially admitted an abuse but realize the impossibility of extending the benefits of such methods to all the sick, have suggested ways and means of helping out, either by establishing municipal or other public centres, by building up associations of physicians as diagnostic clinics or in similar ways. All of these efforts are commendable and deserve support and it is particularly fortunate that the public has begun to realize a new role of our hospitals, as centres where the costly equipment of modern investigation with the personnel to use it to the best advantage may be collected for the benefit of the whole community, rich and poor alike. But reflection must make it clear that the complete and often in many particulars quite needlessly detailed investigations of normal or but slightly abnormal cases is an extravagance that must rob more necessary cases of the benefits of the facilities at hand. I have seen a bound volume of studies of a confessedly normal individual which contained practically all the examinations I detailed a few moments ago, and, were it desirable, could easily relate to you scores of cases in which machine-made examinations of all sorts were conducted without the slightest reference to the necessities of the patients. Lest I seem to bear too critically upon my own profession—and no one has less right or wish to do so than one who has been occupied in teaching medical students for a generation—let me say in the beginning that the public is largely responsible. We hear much in cities from well-

to-do and solid people about the passing of the good old family doctor who used to treat them in every ailment, but our friends are forgetful that the family doctor still exists in smaller towns and country districts and even in large cities in sections where wealth and luxuries are rare. The same friends, however, are the first to search out all sorts of specialists and to question the wisdom or the motives of their own doctor in conducting a simple case without recourse to sublimated specialism.

But we as a profession cannot lay the blame entirely on the layman's desire to have the "latest and the best." We have ourselves suffered a loss of proper balance in the too rapid acquisition of knowledge and have allowed an atrophy of our powers of observation and reflection to grow upon us. New methods of investigation in many cases first give us the power to distinguish obscure conditions and later permit a broader study by simpler means of the very conditions that were first differentiated by refined technic. Thereafter, the refinement ceases to be of daily use except in the hands of those whose facilities enable them to push still farther the realm of knowledge. The electrocardiograph and polygraph have cleared up for us many of the knotty problems of cardiac arrhythmia and chemical and physical studies have given us somewhat more definite classifications of renal diseases; but, in daily routine, the trained clinician can, with relatively few exceptions, dispense with these refinements. Bacteriologists have taught us by elaborate and difficult methods the distinctions in the type-forms of certain infections, but it is his duty as well as that of the clinician to find short cuts to rapid diagnosis. And above all else, we need today a substantial return to some of the habits of such old-time clinicians as I first mentioned, which will give us more broadly trained internists—well grounded in all the modern sciences, but not so stunted in their perceptive and reflective faculties. It is quite true that medical students now-a-days are well taught in better medical schools and a fair balance is usually observed between the all important study, on the one hand, of the patient himself, his history and his habits, his occupation and environment and, on the other hand, of all the methods of refined modern investigation. Naturally, one will see more emphasis in one aspect, another in the other. But, as time advances after graduation and

new facts and methods accumulate, the tendency grows on many to relax of their personal efforts to determine matters for themselves and to pass on the decision to someone else—a laboratory technician or a specialist of whose value in diagnosis they have exaggerate noting, based upon their unfamiliarity with details of new discoveries and a feeling of incapacity to form a proper judgment. I can easily believe that where one has a fragmentary knowledge of new things it is easy for the conscientious man to hand over his problem to another and accept the decision even when it runs counter to his most grounded convictions. From this point, the descent is easy to the habit of transferring all his problems to other agencies. The only corrective for this is a wider adoption of post-graduate study as a custom of our profession. This may be through the activities of county societies properly organized, through sub-committees of the local profession, or through travel and attendance at a suitable graduate school or a general hospital where facilities are granted. No one of these agencies alone will suffice, for the need is great and extensive.

I would submit it as a general proposition that the hospitals throughout the country owe it to the profession as one of their major duties to institute such opportunities for the continuation studies of those whose practical work has prevented their keeping fully up to date, and that hospital physicians and surgeons owe to their brethren of the profession such devotion to their special work that they may be graduate instructors of the less fortunately situated.

To the graduate himself I would commend as an indispensable proposition—that all is not true that is new; the wise man listens patiently and reserves his judgment. Further, I should like to add that a considerable need of the day in schools—both graduate and undergraduate—is that the teachers of practical branches should be real clinicians, and this applies to surgery as well as medicine. The complexity of our present day situation requires much hard thinking and working to devise ways and means to make available the splendid fruits of modern science—it may be of some short cuts in methods, it may be by more thorough-going review of clinical conditions, checked by the most refined technic of scientific methods.

Let no one mistake that the purpose of this address is to discourage the abundant use of all modern methods where needed or to give countenance to their neglect by physicians who will not learn their value. Were the latter the case, we should indeed incur the contempt of all men for a profession that does not take its own contributions seriously.

1728 Spruce Street.

CONCERNING RENAL COMPLICATIONS OF URETERAL STONE AND THEIR PREVENTION.*

By LEO BUERGER, M. D., New York, N. Y.

Since the development of special methods of attacking ureteral stones through the cystoscope, the attention of urologists has been focused on the treatment of stones impacted in the lower pelvic ureter. Little mention has been made of a more important phase of therapy which concerns itself with the treatment of calculi situated anywhere in the ureteral path, and from the very onset of the symptoms. Some of our most eminent authorities in recent contributions seem to accept the view that Nature should be permitted to expel a ureteral calculus without instrumental aid. It has been said that in the absence of intense and recurring pain lasting for some time, or in the absence of complications in the kidney, such as acute cortical or perinephritic lesions, or in the absence of urinary retention sufficient to damage the kidney, one can well afford to await spontaneous expulsion of the calculus, provided it is not too large to pass; and, that as a rule it is best to allow a stone less than two centimeters in diameter to pass spontaneously.

Little can be found in the literature bearing upon the advisability of the application of the cystoscope as a therapeutic measure from the very beginning of the clinical history.

If I may anticipate by presenting the thesis of my present paper at this juncture, I would state that cystoscopic intervention is advisable in almost all cases of ureteral stone within a short period after the stone has found lodgment in the ureter in its descent from the kidney.

This view is somewhat at variance with that

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of clinicians and even some urologists who, out of conservatism, have been wont to counsel their patients to wait weeks or months for the stone to pass. Whilst on the one hand there are those who intervene too early in a case of descending ureteral stone, as well as in a case of renal calculi, there are others who withhold all methods of treatment, except merely symptomatic medical care. If it can be shown by clinical, surgical and pathologic observation that it is a fallacy to wait altogether for spontaneous expulsion of calculi in the ureter, my hypothesis that cystoscopic treatment should be given early in the clinical course will find substantiation. Such a view has been arrived at, firstly, by reason of the most satisfactory results obtained by the application of the author's special cystoscopic methods for facilitating the descent of ureteral calculi, and secondly, in a review of the outcome of those cases in which such treatment had not been applied.

To accept the dictum that calculi one centimeter or more in diameter, even to a diameter of two centimeters, are often expelled spontaneously by Nature, is a generalization that is fraught with considerable danger to the individual case, although true in many instances. For, a sense of false security is thus very easily inculcated. So many are the complications in the ureter and kidney, and so great is the danger of impaction and local growth of the calculus, that we feel convinced that many of the cases in which ureterotomy or some renal operation has become necessary would have escaped either one or both of these procedures by the timely application of the methods that I shall describe later. Even though it be true that a stone of considerable size may occasionally pass spontaneously without aid, our aim should be directed towards the prevention of the complications (which I shall discuss further on), and towards expediting the downward travel of the calculus in its course through the ureteral channel.

It may be accepted as proven by cystoscopic researches that certain transitory or even permanent lesions are wont to accompany the majority of attacks of so-called ureteral colic. These are the purely mechanical results of obstruction of the conducting system with retention of excretion products in the pelvis of the kidney and ureter and consequent infection.

HYDROURETER AND HYDRONEPHROSIS. The

role of retention of urine in the production of colic has not been correctly appraised, since it has been generally believed that the mechanical effects of the descent of the ureter stone, either from the kidney into the ureter, or down the ureter, was sufficient cause, either by virtue of the spasm created, or by the mechanical destructive effects on the inner surface of the ureter, to account for the symptom of pain. If one, however, makes a practice of performing a cystoscopy on a large number of cases of ureteral colic or renal colic during the attacks, one will be surprised to learn that not only acute pain, but persisting severe pain in the lumbar ureteral region is in most instances due to the distention of the pelvis of the kidney and ureter with retained urine.

The immediate lesions as well as the complications can be best combated by the establishment of drainage through the ureter alongside of the calculus. It is by the cystoscopic methods to be described that such re-establishment of the continuity of the conducting channel can be brought about. In other words, by certain conservative cystoscopic procedures, we aim not only to further the passage of the calculus, but to conserve a sufficiency of drainage, thereby diminishing or even obviating the dangers of renal infection.

The necessity for more active interference rather than the expectancy, advised by some, is based on the following facts:

Firstly, ureteral calculi more than one-quarter of an inch in diameter are frequently arrested in certain well known narrow portions of the ureter where they become permanently incarcerated, the blockage produced leading to dilatation of the ureter, dilatation of the pelvis of the kidney, secondary infection and destruction of the renal organ.

Secondly, even small stones over two-sixteenths of an inch in diameter and occasionally three-sixteenths may be similarly arrested. We are not able to prognosticate in which instances such permanent halting with blockage will take place.

Thirdly, by the passage of one or more ureteral catheters of varying sizes, or by the simultaneous passage of bougies and catheters, or bougies alone, ureter drainage can be established and a definite effect produced upon the descent of the stone.

Fourthly, even large stones (one centimeter

or more in diameter), can be attacked by the above and other methods.

Fifthly, the timely introduction of ureteral catheters can be demonstrated to be most effective in the prevention of complications in the kidney.

Sixthly, the emptying of the distended renal pelvis by reason of ureteral blockage by stone is a most reliable means, not only by relieving the suffering of the patient, but also by conserving the integrity of the kidney, which might be otherwise irremediably damaged.

In addition to the above reasons for cystoscopic intervention, there are other symptoms that often require relief. And this cannot be obtained by the use of drugs, either morphine, benzyl benzoate, or other means. The employment of the ureter catheter, however, is a most remarkable and effectual measure which we recommend early in the clinical course of the malady.

The acute symptoms that may make a demand upon our resources are unusual degrees of retention of urine in the kidney, repeated colic with or without fever, symptoms of intestinal obstruction and anuria. It is self-evident that when colics are repeated and become insufferable (usually due to the large amount of retention in the affected kidney), and if there be fever, either aseptic or due to infection, the renal pelvis must be emptied as soon as possible, and that cystoscopic methods must be applied.

But it is also in the subacute and chronic forms of the malady that we advise the early introduction of instruments into the ureter. It is perhaps only in those mild attacks with or without hematuria, which are due to concretions or very small stones, that we advise waiting. Here the patient may be allowed to undergo X-ray examination after the acute symptoms will have subsided and, if this is negative, be permitted to wait for a recurrence of the symptoms. But even here, if the attacks be repeated, the patient should submit to cystoscopic examination and treatment. In the very mild cases, if the hematuria is severe, and if the pain recur within a short period or be continuous over more than twenty-four or twenty-eight hours, cystoscopy is also in order. Even in the mild cases, when there is fever or other suggestion of infection, one should not wait longer than twenty-four to forty-eight

hours before introducing a catheter into the ureter.

In all cases where the attacks are unusually severe, persistent, with the presence of rigidity or a renal mass, with or without complications, such as fever, intestinal obstruction or suppression of urine, it will not be wise to procrastinate.

VARYING DEGREES OF HYDRONEPHROSIS AND HYDROURETER. As before mentioned, the usual sequence of ureteral obstruction due to stone is dilatation of the conducting system above the obstacle implicating the ureter and renal pelvis. In fact, most of the symptomatology is due to this dilatation, particularly when pain is intense, and the urinary secretion continues. In rare instances, after a certain degree of stretching of the renal pelvis and ureter has occurred, unilateral inhibition of secretion takes place. Relief is often the result and thus not due to abolishment of the obturation. Or, as the kidney ceases to secrete, the retained fluid gradually leaks alongside of the stone or is absorbed, and a small kidney is the result. This, however, is not the usual outcome, and we are usually confronted with the mechanical effects of hydrostatic pressure, which afford a problem both for the relief of symptoms and relief of pathology.

The ordinary course of events, when a stone becomes impacted in the ureter, is an attack of pain with ballooning of the ureter and pelvis until the pressure becomes so great that urine may find its way between the calculus and the ureteral wall, and spontaneous relief is obtained; or, by virtue of the pressure and repeated colic, the stone passes to another or lower portion of the ureter and, in its descent, permits of the evacuation of the retained renal contents. In both ways amelioration or disappearance of the pain is brought about.

All will admit that therapeutic measures will find application in the acute attacks of retention. There is, however, another type of subacute, or more or less chronic retention of urine above the calculus, whose clinical course does not seem to have been appreciated by the clinician because of the paucity or absence of symptoms in many of the cases.

In short, accumulation of secretory products may occur to varying extents, either leaving (1) remediable alterations in the kidney and ureter, or (2) eventuating in irremediable ef-

fects, depending upon the duration of the hydrostatic pressure.

REMEDIAL FORMS OF DISTENTION. Dilatation of considerable duration (weeks or even months), is apt to respond to drainage with the ureter catheter. The absence of symptoms in many of the cases may mislead us into a casual disinterested attitude towards the application of remedies, and often it is only when there are exacerbations of pain or attacks of infection that the true nature of the changes that are going on in the kidney and ureter are properly appraised. It is for these reasons that a correct estimation of the conditions above the calculus should be arrived at by the proper cystoscopic measures.

When, by reason of great duration of the distention of the kidney and ureter, marked pathological lesions have taken place, with atrophy of the renal cortex, the opportunity for a restoration to normal will have been lost.

An excellent example of more or less chronic dilatation of the pelvis and ureter in a case of stone impacted in the lower ureter is afforded by the clinical history of this patient, in whom the existence of a dilated pelvis would have been overlooked, had not the cystoscope been frequently applied.

MODERATE HYDRONEPHROSIS WITH CALCULUS IN LOWER URETER REDUCED AND TREATED BY A URETER CATHETER.

H. K., male, had an attack of left renal colic two years previously. He had been well until one month ago, when he had an attack of renal colic with blood in the urine and pain in the left lumbar region radiating into the bladder.

Cystoscopy, November 16, 1916. The right urinary tract was negative. In the *left ureter*, 2 cm. above the bladder, there was an obstruction which was finally surmounted, followed by a sudden gush of urine, more than 40 cc. being collected in a continuous stream. After thorough evacuation of the pelvis of the kidney, pyelography was done, and a typical hydronephrosis demonstrated with a moderate degree of dilatation of the pelvis and calyces. A shadow was found about 3 cm. from the bladder, corresponding to the situation of the stone.

In spite of the advice given the patient to have the renal pelvis emptied at least once a week or oftener, if necessary, he did not present himself for examination until the 18th of December, 1916, about one month later. Cystoscopy revealed the fact that the left renal

pelvis contained about 25 cc. of retained urine, which was completely evacuated after the catheter had been allowed to remain *in situ* for one hour. A second catheter was passed up alongside of the first, which caused considerable dilatation of the ureter and permitted the stone to descend.

Examination, March 12, 1917, exploratory cystoscopy, to determine whether the obstruction still existed. The catheter passed without interference, and there was no retained urine in the kidney demonstrable.

Subsequent X-ray examination failed to reveal the presence of the stone.

This case, as well as others of this type, permit us to draw the following lessons:

First, chronic states of hydronephrosis may result from leaving the expulsion of the stone to Nature alone.

Second, interference with the cystoscope and employment of catheters to drain the kidney and to stimulate the passage of the stone by dilatation of the ureter are valuable and reliable means not only in combating the distention and restoring the pelvis and the kidney to normal, but also in furthering the passage of the stone.

Third, the case described demonstrates conclusively that an interval of one month is too long to wait for cystoscopic treatment.

Fourth, if the course of this case be compared with others in which treatment had been more frequently applied, it will be noted that the restoration of the renal pelvis to normal capacity was usually accomplished in much shorter time.

Fifth, the absence of symptoms must not make us believe that the kidney is emptying itself.

Sixth, it may only be during attacks of acute swelling of the ureter about the stone with increasing distention, or with the advent of mild degrees of infection, that attacks of colic are noted, the patient feeling well in the interim.

Two types of clinical course are encountered; those cases in which there is more or less constant pain, where intervention of some sort is usually demanded for relief, and secondly, those insidious types whose manifestations may be absent. Absence of pain, therefore, must not be interpreted as indicative of the absence of hydronephrosis.

THERAPEUTIC CONCLUSIONS. First, treat-

ment with the ureter catheter should be given so as to prevent chronic hydronephrosis, both by emptying and dilating the ureteral channel, even if this does not move the ureter calculus.

Second, in every instance of positive calculus obstruction demonstrable either with the X-ray or with the cystoscope, cystoscopic treatment is in order, unless the stone is immediately passed within twenty-four to seventy-two hours.

Third, attacks of pain are usually an indication of retention of urine.

Fourth, continuous pain usually indicates complete retention.

Fifth, the absence of pain after one or more attacks of ureter colic does not imply the absence of renal distention, for chronic distention may exist with rare attacks of exacerbations, the latter manifestations being the only ones that arouse the interest of the patient.

Sixth, treatment should be given in the free interval, particularly if data are at hand that suggest that retention is present.

URETERAL CALCULI REQUIRING URETEROTOMY AND RENAL DRAINAGE. Many are the instances in my own experience in which I have been convinced that the timely application of the cystoscope, immediately after or during the first attack of renal or ureteral colic, would have prevented infection of the kidney and avoided the necessity of operative procedure. Let us analyze a single example.

SMALL URETERAL CALCULUS IMPACTED IN THE LUMBAR URETER, WITH RENAL INFECTION, INFECTED HYDRONEPHROSIS; URETEROTOMY, NEPHROTOMY, RECOVERY.

L. L. Three attacks of renal and ureteral colic in a young woman; the first three months previously in the left lumbar region, radiating to the pubis and lasting two days; the second, six weeks ago with fever, lasting three days; and the third, four days before examination, with temperature as high as 102°.

September 12, 1921, cystoscopy demonstrated obstruction at 20 cm. from the left ureteral orifice in the bladder, a No. 6 French catheter being too large to pass. A smaller catheter drained off a test tube full of purulent urine, and was allowed to stay *in situ* for fifteen minutes so as to drain the kidney (bacillus coli in the urine.) X-ray examination showed considerable enlargement of the left kidney and, between the third and fourth transverse processes, a small shadow less than one-fourth

inch in diameter, doubtless a stone in the ureter.

In view of these findings an obstructed ureter, an infected kidney above, a history of three months' duration and the temperature, operation was advised, although another attempt to drain the kidney and mobilize the stone was suggested.

With temperature ranging from 100° to 101.4° while at the hospital, from the 12th of September to the 14th, another cystoscopy was done on the 14th, together with X-ray examination, the calculus being found well imbedded in its previous situation.

Operation, September 14, 1921, revealed a large kidney with edema of the perinephritic fat particularly about the lower pole of the kidney, the kidney bluish, cyanotic and adherent. The ureter was at once located and lifted up with the finger and the calculus brought into view, being tightly incarcerated in a small ureter. The ureter was distended at the site of the calculus, its wall being tensely stretched, pale and almost whitish. A clamp covered with rubber tubing was applied above the stone so as to prevent the escape of purulent urine. A small incision was made, and the calculus extracted. One suture was applied. While this was being done, the clamp slipped inadvertently. A gush of pus through the opening in the ureter followed, demonstrating that the pelvis of the kidney was filled with thick, purulent material. Then a small button-hole nephrotomy was done to drain the kidney, the capsule of the latter being stripped. Uneventful recovery.

EPICRISIS AND CONCLUSIONS. This case teaches us that a small calculus well within the size that can be made to pass by cystoscopic methods, can remain in the lumbar ureter for weeks or months without passing, and be complicated within three months from the time of its impaction, with infection of the kidney, necessitating an extensive operation.

Second, the fact that the catheter was able to pass a short distance beyond the stone, even after three months, would indicate that more could have been accomplished at an earlier moment.

Third, the prevention of overdistention of the renal pelvis by the timely use of the catheter would doubtlessly have contributed at least toward the prevention of infection of the kidney, even though the two catheter method of the author had not been previously

successful in causing the complete expulsion of the stone.

Fourth, small stones, particularly in the upper lumbar ureter, are just as apt to become incarcerated and be complicated by infection of the kidney as large ones, and it is these, therefore, that should be attacked early, so as to facilitate their descent.

Fifth, infection of the kidney in my experience, as a complication of stone, both as to severity and frequency of occurrence, varies inversely, as the distance between the stone and the kidney increases; so that, the greater the distance between the stone and the kidney, the less the chances of severe destructive and infectious influences on that organ. Therefore, every attempt should be made to further the passage of the stone to a part of the ureter in which complications in the kidney are apt to be less extensive and less severe.

OTHER COMPLICATIONS. These may be divided as follows:

First, marked hydronephrosis with secondary infection.

Second, infection of the non-hydronephrotic kidney.

Third, rupture of the hydronephrosis or pyonephrosis.

Fourth, perinephritic abscess.

Fifth, dilatation of the ureter.

Sixth, sclerosis and stricture of the ureter.

Seventh, secondary stone formation in a dilated ureter or in a ureter above a stricture.

Eighth, periureteritis and periureteral abscess with or without ureteral perforation.

Time will not permit me to give a comprehensive account of the variegated pathology in both kidney and ureter that may result from the retention of impacted stone in the ureter. Suffice it to say here, that the finding of extensive hydronephrosis with secondary calculus formation and subsequent infection, necessitating nephrectomy some time in the clinical course, is a most common complication. Nor must we lose sight of the infections that may occur in kidneys that are small or very slightly dilated, for even these are prone to attacks of pyelitis, pyelonephritis and multiple abscesses, as also suppurative infarctions, when the obstacle in the ureter is not removed. We have encountered a large number of hydronephroses and even pyonephroses with rupture, the patient presenting himself with a large perirenal exudate of urine and pus. Oc-

asionally, a perinephritic abscess will be diagnosed clinically, where investigation will demonstrate infection through a dilated kidney, the ureter stone having been wholly overlooked.

Moderate and extensive dilatations of the ureter are so common as to require but passing mention. However, where marked and indelible alterations have been produced in the lower conducting system, grave changes in the kidney must result. The ureter behaves differently, depending upon the degree of obstruction and type of infection. Thus, there are cases where the ureter is found enormously attenuated and dilated, and in other cases the dilatation is but moderate and the sclerosis and fibrosis of the ureter wall are marked. Such sclerosis may take place not only about the stone, but above it; when in the neighborhood of the stone, it not infrequently leads to subsequent stricture formation, and the whole urinary tract may be compromised by a relatively minute lesion.

By virtue of the ureteral changes, dilatation, sclerosis and stricture, retention of urine with puddling takes place, leading to secondary stone formation in the narrowed portion of the channel.

Periureteritis is exceedingly common in the pelvic portion of the ureter, leading to the formation of large sclerotic masses of fat, in which the ureter is tightly imbedded, forming a mass which in itself plays a deleterious influence upon the ureter as a conducting mechanism. In the lumbar portion of the ureter we not infrequently encounter the formation of periureteral abscesses, particularly when perforation of the ureter takes place.

METHODS OF PREVENTING COMPLICATIONS OF URETER STONES. The title of this paper has called for a discussion of methods of preventing the complications of ureter stones. Such prophylaxis is tantamount to the application of the most improved measures for expediting the passage of ureter stones, and for relieving the kidney and ureter of the effects of distention and infection. The methods that have given me the best results during the last ten years may be summarized as follows:

First, the employment of catheters and bougies in the ureter.

Second, the use of olivary dilators, and

Third, instrumental intravesical procedures to remove calculi from the intramural portion

of the ureter by incision through the cystoscope or otherwise.

Much has been said regarding the removal of impacted stones through the cystoscope, and vague and general statements are encountered in the literature regarding the mode of manipulating instruments in the ureter for the expulsion of ureteral stones. Success, however, depends upon careful attention to minutiae, as well as to general principles, and I may, therefore, be permitted to go into detail as to the technic and procedure that have given me the best results. Let me say at the outset, that one should look askance upon the claims of those who would possess such unusual skill and such highly specialized cystoscopic instruments, as to enable them both to seize and extract a ureteral calculus when it lies above the bladder. Not only do I believe such statements to be gross exaggeration, but I wish to go down on record as expressing the view that any radical means sufficiently intensive to extract by force an impacted calculus within the ureter above the bladder is not only incompatible with the mechanical possibilities in the bladder and ureter, but, if possible, would be dangerous to the integrity of this channel.

Those who have had an opportunity to operate upon many cases of ureter stones will appreciate what force is necessary to bring about even a milking of the stone from one part of the ureter to another, when the channel is within one's grasp. To be sure, those calculi amenable to conservative treatment may not be imbedded so tightly. But even these require the more delicate procedures—those whose action is slow in bringing about dilatation of the ureter, and such as are successful by reason of the very tardiness of their action.

It will not be possible here to go into every phase of the application of my methods because of lack of time. Enough, however, shall be said to elucidate the chief points that are essential in the treatment of the usual type of cases encountered. Two large classes may be recognized:

(a) Cases with a calculus in the lower pelvic ureter (true pelvis).

(b) With the stone in the lumbar ureter or in the false pelvis.

THE TREATMENT OF THE URETERAL CALCULUS IN THE LOWER PELVIC URETER.—First, by means of catheters or bougies. The armamentarium requisite for aiding the expulsion of ureteral

stones, varying in size up to 1 cm. and even one-half inch in diameter, is in most instances, a simple one, and comprises a cystoscope, ureter catheters of sizes from 4 to 7 Fr. calibre, ureteral bougies in sizes of 3 and 4 Fr., and a Garceau catheter tapering from 11 Fr. to a terminal opening of about 5 Fr. It is only for certain special cases that are recalcitrant and do not respond to the author's catheter method, that the operating cystoscope, special olivary metal tipped bougies, punch forceps and scissor forceps are required.

So, armed with an ordinary catheterizing cystoscope in which one No. 6 catheter and a No. 5 catheter of the olivary style have been threaded, the affected ureter orifice is sought. With the stone in the intramural portion, or near the orifice, distinctive changes will be observed, such as swelling of the ureteral mound, and even edema of the ureteral orifice. But with the calculus at its most frequent location, that is, 3, 4 or 5 cm. from the bladder, no visible alterations of the intramural portions of the ureter and ureteral lip are usually in evidence. In many cases, however, careful attention to the ureteral mound, when the stone is as low as this, will reveal a slight protrusion of the corresponding portions of the bladder wall. A large ureter catheter (No. 6 Fr.) is introduced, and the findings and procedure will depend upon whether an obstruction is met or not.

(a) *Calculus With Obstruction.* An olivary tipped catheter must be used, since the whistle tips or other types of catheters may encounter artificial obstructions that are not due to the presence of a foreign body. With the stone in this situation, the catheter will meet with an obstacle which is either surmounted or not (passable or impassable).

Procedure in the Case of Passable Obstruction. When the catheter meets the obstruction, it is rotated on its long axis, withdrawn and introduced again if necessary, and will then finally surmount the obstacle and drain out urine which has been retained in the ureter and pelvis above. After evacuating the contents of the ureter and pelvis, the catheter alone may be allowed to remain in place from one-half hour to one hour, the cystoscope being removed, or, an attempt is made to pass the second catheter beyond the obstruction. This may or may not be feasible, depending upon whether the orifice is large enough to admit the catheter,

whether the patient is sufficiently tractable, and on whether the obstacle will permit the second catheter to go by. If one catheter alone will pass, this should be allowed to remain *in situ* for at least one-half hour, preferably one hour or more, and then removed. If pus be found in the kidney specimens, irrigation with mild silver nitrate solutions, such as one to one thousand, or one to five hundred, is in order.

The proper time for a second treatment of this sort varies according to a number of factors: First, a recurrence of acute colic with retention of urine; and, second, the advent of a second attack with continuous unremitting pain, with or without infection. Infection is never seen as the result of cystoscopic manipulations.

If no such complicating conditions arise, a second treatment may be undertaken one week after the first or earlier, an attempt being made to accomplish more and more at each sitting.

The Two-Catheter Method. This is the method *par excellence*, when applied sufficiently often and in the proper way, for expediting the passage of a ureteral stone. Either at the first séance or at the second, it will be possible by the proper manœuvres to pass two catheters into the ureter beyond the stone. In some instances it may require a great deal of patience, and we will be unable to accomplish our purpose until the third or fourth séance. Eventually, however, with the application of the correct technic, two No. 6 Fr. catheters, or one No. 6 and one No. 5, will be made to pass, and it is from this time on that quick progress will be made in causing the descent of the calculus, if some has not already been made in the previous procedures.

It will often be observed that the second catheter, which may be a smaller one, will at times pass only as far as the obstruction and no higher. The injection of olive oil or glycerin may aid its passage, as well as the lubrication of its tip with sterile vaselin. Or, if we wish, a small amount of adrenalin oil may be injected, admixed with two or four per cent novocain (five or ten drops)—methods which if used alone, are far inferior in their efficacy to the mechanical procedures. Until the second catheter passes, we should repeat the leaving of one catheter *in situ* for an hour or more,

and cause dilatation of the intramural portion of the orifice by the graded use of two catheters of varying size or with a bougie. When finally we have succeeded in passing the two catheters beyond the obstacle, these should be introduced sufficiently high, twenty-five centimeters or more, so that in withdrawing the cystoscope, they may not be dislodged into the bladder. With the cystoscope removed and the two catheters *in situ* beyond the stone, the patient is carefully transferred to a stretcher carriage and allowed to remain there with the catheters draining from one-half hour to an hour or more.

The removal of the two catheters is also an important step. Both catheters should be pulled out simultaneously. As they are being withdrawn, considerable resistance may be encountered, so that at times some force may be necessary to extricate them. Indeed, by some sort of chemical process, the nature of which is hard to explain, agglutination of the catheter and the stone can and does take place, as a number of remarkable circumstances have taught me. It is by friction, however, that I believe the downward course is usually accomplished.

As the catheters are being still further withdrawn, we may in rare instances encounter another obstruction. The calculus agglutinated to the catheters in reaching the ureteral or urethral orifice may give rise to this sensation. In several cases the stone was immediately dislodged from its site of impaction in the ureter. In one case the calculus was drawn out through the urethra attached to the catheters (L. B.), these having been allowed to remain *in situ* over night. In another instance the calculus was broken up, which is a rather frequent result, and several fragments remained firmly adherent to one of the catheters, the rest of the stone having been withdrawn into the bladder. In other instances, the stone was displaced into the bladder, where it was removed with the forceps of the operating cystoscope.

The following most unusual and interesting example of acute symptoms, associated with stone in the ureter, beautifully illustrates the value of the retention of two catheters in the ureter, and how in one treatment the stone may be extricated.

IMPACTED OBSTRUCTING URETERAL CALCULUS, DILATED URETER AND RENAL PELVIS, WITH MANIFESTATIONS NOW OF INTESTINAL OBSTRUCTION, OF PERITONITIS, WITH FEVER, ABDOMINAL DISTENTION, REBOUND TENDERNESS, COMPLETELY RELIEVED AND CURED THROUGH CYSTOSCOPIC METHODS BY CAUSING EXPULSION OF THE STONE.

L. B., male, presented the following clinical picture: A distended abdomen, constipation, severe pain in the left iliac fossa, rigidity of the left iliac region, distinct rebound tenderness and per rectum a small indefinite mass, high up in the cul-de-sac on the left side, and moderate fever.

Cystoscopy, October 4, 1919, demonstrated that there was urinary retention in the left ureter and kidney, for about one ounce of turbid urine, containing some red blood cells, without pus, could be collected in a continuous stream when a catheter was inserted some 10 cm. into the ureter, suggesting a calculus low down in the ureter, with dilatation of the ureter and acute hydronephrosis.

In spite of the relief that was afforded in this case by the emptying of the kidney, distinct aggravation of the symptoms occurred on the following day, when the temperature rose to 102° in the afternoon. It was surmised that by virtue of the swelling of the ureter, obstruction had again taken place, so that catheterization of the ureter was again in order. On the following day, October 5, the tongue was coated, the left side of the abdomen was hard, with board-like rigidity, the temperature 103°, and the patient was unable to take food; in short, symptoms suggestive of a combination of intestinal obstruction and possibly peritonitis.

On the 6th of October, therefore, catheterization of the left ureter was done again, and the same phenomena of retention of urine could be demonstrated. So great was this retention that pressure over the kidney and bladder regions, as well as over the left iliac fossa, increased the flow through the ureteral catheter. Two ureteral catheters were then inserted into the left ureter up to the kidney and the cystoscope removed, *the catheters being allowed to remain in from the time of insertion, 3 P. M., on October 6, until the next morning (9:30 A. M.).*

On the 7th of October, the abdomen was distinctly less rigid, the patient's condition con-

siderably improved, the temperature having dropped to 100°. The catheters were then slowly withdrawn simultaneously, and as they were being tugged, it seemed that an obstruction to their exit could be distinctly made out. *As they were pulled out, this resistance was seen to be due to the extraction of a ureteral calculus that was tightly adherent to the two catheters, as it was drawn through the ureter, bladder and urethra without being dislodged—a most remarkable and unusual occurrence.* From then on the patient made an uneventful recovery.

Such a startling result can only be rarely obtained, but the extrication of the calculus, either immediately upon withdrawing the catheters or shortly thereafter, has occurred so frequently in our experience, as to permit us to consider this the most valuable of all the procedures.

Ureteral Stone With Infection. Where a ureteral stone in the lower pelvic ureter is associated with infection—usually of the bacillus coli type—the question of operative intervention may have to be considered. Usually, however, the methods described, or with slight variation, will suffice to cause the symptoms as well as the infection to subside. Whereas most patients may be treated in ambulatory fashion at the office and allowed to remain one-half hour, one hour or more with the catheters in place, it is best to keep the patient with renal infection in bed at the hospital, where the catheter is allowed to stay in a longer period of time, two to ten hours, as a rule. Silver nitrate irrigations of the renal pelvis are recommended both after evacuation of the pelvis as well as before removing the catheters.

(b) *The Non-Passable Obstruction.* What may appear to be an insurmountable obstruction in the ureter will, by the application of correct methods and with patience, develop into a passable obstruction. The technic is as follows: The ureter below is injected with oil or glycerin, with or without adrenalin and novocain. One catheter is introduced and followed by a bougie of small calibre, 3 or 4 Fr., or one or more bougies, or whalebone filiforms are passed up the ureter with a view to passing the barrier, just as is our custom with filiform strictures of the urethra. When this fails, we still have recourse to dislodgment by means of the olivary dilators, which I shall describe later on. It is but in rare cases that

our patience and persistence are not rewarded by the passage of one catheter and finally a second beyond the stone.

Intervals Between the Séances. As before mentioned, it is our rule to give treatments at weekly intervals, where the following complicating factors are absent: Rapidly recurring attacks of pain, persisting hydronephrosis and hydroureter, infection, suppression of urine or reflex ileus. Any of these eventualities may require the precocious intervention with the cystoscope. Otherwise, it is well to wait, five, six or seven days, as a rule, a week, before repeating the treatment.

The Results of the Two-Catheter Method of Treatment. Four types of results are obtainable. First, renal drainage with dilatation of the ureter, but without immediate descent of the stone; second, immediate movement of the calculus downward; third, immediate expulsion of the calculus after treatment, either with the calculus attached to the catheters, or by the spontaneous evacuation of the calculus with micturition, or followed by removal from the bladder through the operating cystoscope; and fourth, expulsion, shortly (few hours to a day or more), after the last treatment.

Technic for Dilatation of the Intramural Portion of the Ureter. Occasionally, after several treatments, if the stone has made considerable descent, and if it has approached the wall of the bladder, near the beginning of the intramural portion of the ureter, it is advisable to have recourse to special manœuvres for the purpose of dilating this portion of the ureteral channel. To accomplish this, we make an attempt to cross the catheters in the ureter and simultaneously engage them against the ureter stone. The special manipulations employed are the following: After the introduction of the second catheter, the first one is withdrawn somewhat and reintroduced. Then a similar manœuvre is carried out with the second catheter. These procedures are repeated until we find that, by simultaneously pulling upon both catheters with the ureter orifice in view, the catheters instead of pulling out in the line of the ureter, are made to diverge. In doing so, the ureter orifice is forcibly dilated. This effect is produced not only at the orifice, but throughout the ureteral wall, and occasionally such force can be exerted upon withdrawal as to actually produce a downward movement of the stone. In a few cases the

stone was made to pass through the intramural portion of the ureter by this method, *and seen to emerge under the guidance of the eye.* As a rule, however, the effect is not so striking and accomplishes merely the dilatation of the lower ureter, with or without immediate appreciable movement of the calculus.

THE TREATMENT OF CALCULI IN THE LUMBAR URETER. The problem here is somewhat more difficult, for, not only is the impaction apt to be less easily surmounted, but also because a small calculus may be occasionally caused to move back into the pelvis of the kidney. However, the general methods employed are the same, except that greater care must be exerted to refrain from withdrawing the catheters as the cystoscope is removed.

THE USE OF THE AUTHOR'S OLIVARY DILATORS. This method was suggested by me some nine years ago. It employs a bougie electrode whose proximal end is furnished with a screw thread and whose distal end is provided with a coupling for connection with the high frequency machine. The screw end allows of the attachment of small olivary tips of varying sizes from 5 to 15 Fr. The bougie is introduced through the operating cystoscope into the ureter, whose lumen is gradually dilated by the successive employment of olives of increasing size. Originally, the d'Arsonval current was suggested as an adjuvant, although more lately it has been found that as good results can be obtained without the use of electricity.

This method is applicable under two conditions: Firstly, when the two-catheter method fails to coax the stone beyond a certain point, and the lower ureteral channel is too narrow; and secondly, in the case of larger stones, particularly when these have been imbedded for a considerable period of time.

The olivary dilators are exceedingly efficacious, not only in dislodging a calculus that has been well incarcerated, but the dilating effect produced is exceedingly valuable. We anoint the olive well with vaseline so as to make introduction easier, and attempt not only to reach the stone, but gradually to insinuate the olive beyond the stone, which it will frequently pass. When carefully used and rotated on their long axis, as soon as an obstruction is reached, and if force be avoided, they can be readily made to pass the calculus with a little patience on the part of the operator.

In my experience, I have never encountered

any deleterious results from the application of olivary dilators. Many are the instances of calculi (1 cm. or more in diameter), that had been arrested in a lower ureter for months, that have been made to pass by this method.

LARGE URETERAL STONE IMPACTED FOUR INCHES FROM THE BLADDER MADE TO PASS BY THE USE OF OLIVARY DILATORS.

A. G., male, 57 years of age, had had attacks of left renal and ureteral colic for about five years, with frequent hematuria. He consulted me October 10, 1916, with a history of having had pain in the left flank and ureteral region for several months. On that day X-ray examination demonstrated a calculus over the left sacroiliac synchondrosis, three inches lower than demonstrated in 1914, a period of two years. In all probability this passage was accomplished during one attack, so that it is fair to assume from the history that the calculus had become impacted at the base of the sacrum for some time.

October 27, 1916, X-ray examination showed a calculus almost two centimeters by less than one centimeter over the sacro-iliac synchondrosis, about four inches above the bladder, in the course of the left ureter.

Cystoscopy demonstrated an obstruction in the left ureter between nine and ten centimeters from the orifice, and no urine was obtainable from the corresponding kidney. A shadowgraph catheter inserted identified the shadow as being in the ureter. One week later at cystoscopy, one catheter was made to pass beyond the calculus.

November 16, 1916, dilatation with olivary bougies to 11 Fr., and a No. 9 Fr. olive passed beyond the stone to a distance of about 20 cm., thus dilating the ureter considerably. X-ray examination showed the olive beyond the situation of the stone.

December 5, 1916, dilatation with the olives again, stone having descended somewhat.

December 14, 1916, stone still further down, approaching the true pelvis. The ureter orifice was dilated sufficiently for the stone to pass. This stone was passed spontaneously shortly thereafter.

SPECIAL INTRAVESICAL OPERATIVE PROCEDURES. When a calculus of considerable size (approaching one-half inch or more), has been arrested in the intramural portion of the ureter

for some time, particularly when it has caused protrusion and marked edema of the ureteral lip, it presents a problem for solution with the operating cystoscope. With the author's punch forceps and scissors, the upper lip of the ureter can be incised and the stone then dislodged. It may then be grasped with the forceps and directly removed or manipulated out with catheters and bougies.

URETERAL MEATOTOMY FOR IMPACTED URETERAL CALCULUS. An interesting example of a stone one-half inch in diameter which had been impacted for some time in the intramural portion of the ureter and was made to pass after incising the upper ureteral lip is worthy of citation:

S. B., female, age 52, consulted me on the 8th of November, 1920, with a history of attacks of right renal colic for about eight years, accompanied now and then with chills and fever. Cystoscopy showed a moderate degree of cystitis, the right ureteral mound tumefied, the orifice small and its appearance suggestive of a stone just behind the orifice. It was possible to introduce a ureteral catheter with considerable difficulty beyond the stone, but unable to dislodge it. X-ray examination confirmed the diagnosis of calculus by the finding of an ellipsoid shadow about three-eighths of an inch by one-half inch at a point corresponding to the situation of the stone as diagnosed at cystoscopy, that is, just above the orifice.

On November 12, 1920, the stone was still in the same situation, and the question of operative intervention was considered in view of the fact that the orifice was so small that the passage of such a large stone through it was considered out of the question. However, it was decided to cut the orifice and fulgurate the margin of the incision with a view to stopping the hemorrhage. This was carried out on the 12th of November, when catheterization was found impossible. Immediately after the cutting of the orifice, the stone was partly visible, although still fairly imbedded in a pocket of mucous membrane and, due to the irritability of the patient, it was decided to wait until the following day before making further attempts to dislodge it from its bed. This was not necessary since the patient passed the stone spontaneously soon thereafter.

1000 Park Avenue.

PRESIDENT'S ADDRESS.*

By ALFRED L. GRAY, M. D., Richmond, Va.

Mr. Chairman, Fellows of the Medical Society of Virginia, Ladies, and Gentlemen:

One year ago, in Petersburg, I was, for a few moments, overwhelmed with delight at the unexpected realization of my dreams for the dim distant future, when I was informed of my election as President of this grand old organization. I have said, as you may have observed, that my delight was for a few moments. This statement I make most advisedly for there very soon began to dawn on the tapestried wall of my dream room a vision of the responsibility that accompanied the great honor. In the midst of this vision there loomed up in bold and unerasable characters those which appeared at a certain ancient feast. Having previously more than once beheld a similar vision, I had little difficulty in making the correct interpretation. In searching myself to see wherein the truth of my vision was most conspicuous, I recalled at once that it had been customary, from the beginning, at each annual meeting of this Society, for the President to deliver on the opening night what is known as the "President's Address." Those of you who have heard my efforts, even the most charitable of you, will not be able to deny that the words of the handwriting are as true of me in the matter of delivering an address as in any other of the innumerable respects. Having been condemned in the beginning, therefore, I shall not tempt Fate, but shall present to you a few suggestions that I trust may lead toward the betterment of our beloved profession, and especially that may be of some good to those who constitute our citizenship throughout the confines of our state.

I wish, first, to bring to your attention the campaign that will be waged throughout the nation from October 30th to November 5th. This week will be known as "Cancer Week." During this period every possible method known to those who have studied the subject of cancer prevention and control will be brought into use with the purpose of educating the public as well as the medical profession in the means of early recognition, prevention, and cure of cancer. This campaign is under the auspices of and was inaugurated

by the American Society for the Control of Cancer.

Each state has its own organization and all these will pursue the same general plan. Dr. Robert C. Bryan, of Richmond, is State Chairman, and Miss L. F. Reid, of Grace Hospital, Richmond, is Secretary. The central committee comprises many of the leading men and women of the various professional, civic, social, and industrial organizations, who have promised to lend every effort toward the success of this crusade against a pestilence that destroys annually 90,000 of the population of the United States, and last year claimed 1,284 of the citizens of Virginia.

Let me urge upon you, physicians and layman alike, to give your heartiest co-operation to this movement directed toward lessening the sorrow and anguish inflicted upon so many of us by this most terrible malady. To this end I recommend that the Medical Society of Virginia endorse the work of the American Society for the Control of Cancer, and that the Executive Council appoint a committee of thirteen, one from each congressional district and three from the state at large, and designate the chairman thereof; this committee to be known as the Committee on Cancer or some other suitable title. The duties of this committee should be to co-operate with the State Committee of the national organization and take such other measures as it may deem wise and feasible toward preventing the ravages of this dread disease.

Secondly, I wish to urge the members of our component and associated societies to take a keener interest in their local organizations. There are now fifty-one component societies and one associated society, which have charters from our state association. These represent seventy counties, leaving thirty that have no organization. The doctors of these counties should take steps immediately to perfect an organization and apply to the Executive Council at once for a charter. There is no other way whereby you can have proper voice in the House of Delegates.

I wonder how many of these societies are making the most of their opportunities! Each society should have a fixed meeting time and either a permanent meeting place, or else there should be an orderly rotation to suit the convenience of the members. There should, of course, be a regular order of busi-

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18, 1921.

ness, including therein the discussion of matters of local professional interest, but I wish especially to advocate the introduction of the journal club feature as one of the most interesting and instructive parts of the program. A half dozen men can each subscribe to different leading medical, surgical and special journals, and each be prepared to review the one of his choice at each meeting. In this way the entire membership can have full benefit of all the best current literature with only the cost to him of one subscription. In no other way can the busy doctor keep half so well abreast with the progress of his profession as by thus acquainting himself with what others are doing. If the journal is properly reviewed, little time is consumed in the presentation of that review and the kernels of the whole list of articles published in the chosen journals may be obtained in a short session. Will you not try the plan? It possesses most of the educational advantages that are obtained by the association of several so-called specialists in the practice of what is now becoming so popular in the larger towns and cities under the name of "group medicine."

Above all, attend your meetings and if they are not what they should be, it is your duty to try to make them worth while. There is perhaps no better index to a doctor's progressiveness and up-to-dateness than may be obtained from a glance at the roll of attendance of his medical societies.

Thirdly, may I not also remind you that in addition to being doctors, we are citizens. We owe to ourselves as well as those around us, the duties of good citizenship. Most of us become so absorbed in what is commonly called our "shop" that we get in a rut and follow its course from day to day, neglecting to interest ourselves in affairs not immediately relating to our own calling. The physician is naturally a man of power. He has been obliged to demonstrate a fair amount of ability on at least two occasions or else the laws of our state would not permit him to pursue his profession. His days and nights are consumed in giving advice and so his neighbors learn to respect his opinion. Let him extend some of his counsel beyond the narrow limits offered by the sick and wounded and see if better roads, better schools, better churches, better laws, better government, and a better com-

munity will not result from his efforts.

Fourthly, there is now pending a matter that is of the most vital importance not only to the present members of the medical profession of our state, but to every citizen and taxpayer whatever may be his or her calling, and to the youth and future generations of Virginia and the South. All of us are aware that there was created by our last state legislature a commission on medical education. The purpose of this was to investigate the question of medical instruction in Virginia in all its phases and from every angle, securing all available information from any source whatever, and make recommendations upon this subject when its deliberations were completed.

This commission was especially instructed to consider the most unusual situation that now obtains: viz., the existence in Virginia of two inadequately state-supported medical schools and report upon the question of consolidating their resources and facilities for the purpose of creating thereby a training school for students of medicine, dentistry, and pharmacy more efficient, more economically conducted, and of greater value to the state than is possible under the present conditions. This commission has formulated and presented two reports, both of which are substantially identical except in the matter of location.

The commission is unanimous in its opinion that the schools should be consolidated and should be an integral part of our State University and be owned and wholly controlled by its Board of Visitors. The majority of this commission favored Richmond as the location, while the minority has reported its preference for Charlottesville. It is most unfortunate that a unanimous report could not have been presented and that the governing bodies of the two institutions are in entire disagreement on this one point. The lamentable fact now remains that the whole question has been made a political issue instead of being harmoniously settled upon its merits. But since this deplorable situation is before us, it is clearly our duty to face it.

The training of doctors is essentially a matter of which the doctor himself is the best judge. The advantages and disadvantages of the two locations are best known to those who have had to acquire this medical knowledge for themselves, and, having obtained it, have put it into practical application. One would

hardly consider a physician or a clergyman a competent advisor in the determination of the proper location for a training school for electrical engineers, nor would a pharmacist be an expert on the location of a law school. *A priori* it is equally true that a medical man is a better advisor in this case than one who has had to face none of his problems. As the representative body of the medical profession of our state, it seems to be the plain duty of this Society to take a stand in this matter in accordance with its convictions, having only in mind what is best for our state and our people. Since the prime function of our State University is to serve the people of the State of Virginia, it, of necessity, follows that those things that enable her to serve the greatest number in the highest degree must also be best for our University.

Fifthly, I wish to request your careful consideration of a resolution adopted by the Virginia State Board of Medical Examiners, a copy of which has been sent to the Executive Council. This resolution apprises the regularly licensed profession of an attempt on the part of the chiropractors to have enacted by the coming legislature, laws enabling them to engage in the practice of their cult without their being subject to the requirements of preliminary education and training on the fundamental branches exacted of regular practitioners of medicine. Such legislation will tend to make our state still more of a dumping ground for quacks and fakirs and can but result in serious harm to our people. I trust that this body will pass such resolutions and take such other measures as may help to avert this calamity.

Before I conclude these rambling and disconnected remarks, I wish to commend the work of the Secretary-Treasurer and Business Manager, and his most efficient assistant. I have been, for the past year, in almost daily touch with the executive offices and have observed their work with the highest degree of satisfaction. As in any new undertaking and especially in one so difficult as has been imposed upon our non-medical officers, things will arise that would have been better handled a little differently, so a few, very few, matters have required a little smoothing over. These rough places, however, have all disappeared and I am happy to tell you the office is running like a well oiled machine, as you will learn for yourselves from reports later.

And now let me again express to you my profound appreciation of the honor you conferred upon me in choosing me to guide this Society during the present year. I trust that the program, which has been arranged for you and the scientific exhibits to which I desire to invite your careful attention, may be carried out fully as planned. If so, I have no fear for the success of our meeting.

Professional Building.

HUMANISTIC DEVOTION.*

By STEPHEN HARNSBERGER, M. D., Warrenton, Va.

Hazlitt says "That the modern socialist stultifies all understanding but his own, and that which he conceives like his own." Now, it is not my intention to presume to tell you anything new about cancer, for so little is known about it that I do not wish my paper to appear as a near-glass reflecting nothing. But there is one thing we do know and it is just as intimately a part of our every-day existence as the air we breathe. We know that cancer is on the increase and we recognize the immeasurable suffering and distress which it causes whenever and wherever it elects to light. We also know that locally, and perchance inwardly, in numerous cases, it can be brought to bay by the early attack of quick judgment and election. We further know that delay means death; and we seem to feel that we all somehow or other want "death" staved off to the extremest verge of time. And yet, understanding all these things as most or all of us do, we complacently lavish time apparently unmindful of our own or the people's welfare. This is truth—and truth is said to be productive of utility and utility indicative of fidelity—it should be, we grant, but is it as it should be? Let your own conscience make the answer.

No man to do his duty can longer live in the silent, narrow lane. His head and heart must reach out and take in the atmosphere of progress and humanity. He must develop the power of transforming all that he sees, hears, feels, and thinks into a larger and better scope—live not for and to himself, but in the broader field of usefulness and happiness to all. The day of one idea and swivel thought has passed—the time is here when self should be lost in the world-feeling that health, justice,

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liberty and happiness is the right of every man, woman and child on the earth.

To vividly point out the unwarrantable, even tragic slowness with which people grasp the significance of plain eye and ear demonstrations of safety-first health facts, I beg to relate two case histories:

(1) M. J., male, about 65. Well educated, well informed, regularly read the newspapers, a live politician and an unusually successful business man. Had a small painless lump in his lower lip. Felt it, saw it every day. Had read and re-read the warnings constantly sent out to the public, yet it did not interest or impress him enough to cause him to use the simple precaution that was his sure and only safety. He is now reaping the reward that want of care and fore-thought inexorably imposes.

(2) Mrs. A., aged 82, at the time she called me for a painful enlargement on the inner aspect and just above her left ankle joint. Ulceration had set in and with it increasing pain. Diagnosis cancer. Eleven months previously she noticed a very small movable and painless lump at the point mentioned. Though of advanced age and uneducated, she was more intelligent from "native wit," as the sequel tells, than the doctor she consulted for advice. She at once suspected trouble, she told me, and went to see her family physician. He simply asked, "Does it pain you?" She said, "No." Then he replied, "If it don't pain you it will never result in a cancer." This doctor is known quite well—to many personally and to others through the medical press as an A. M., M. D. He is considered well informed generally, yet he had never grasped the simplest, most important, most certain and, perhaps, most frequent fore-warning symptom of cancer. Now, if the average qualified physician in this day of constant and liberal promulgation is ignorant of the fact that painless abnormalities are the hazardous sort, how great the task of enlightenment that still confronts us?

Naturally, the old lady did not relish losing a leg; but when I told her that every week she lived with the cancer the pains would increase in severity and the cancer itself would require more and more attention in the way of frequent dressings, she readily agreed to an operation. She said it was all right whether she passed away under the anesthetic or came out well; that the thought of dying did not

trouble her at all. And may I not mention that it is usually the feeling of fear, anxiety and pain, or, more properly, the consequent acidosis that kills and not the extent or severity of the operation or the element of age. My long experience and observation at the bedside, remote from every kind of professional assistance, fully convinces me that age has very little, as a rule, to do with causing death in such circumstances. I have had patients of 100 and 103 with pneumonia, fractured femurs and other broken bones, etc., and they readily recovered. *Made and kept comfortable*, they improve and get out as well as do younger persons. Child-like doses frequently act like a charm. Keep this before them every time you visit them—it is a stabilizer that saves.

This old lady was sent to one of our leading hospitals for immediate high amputation, but was returned to me with the statement that she was too old and would not survive an operation. I then took her to another hospital and when the surgeon of my election came and saw her he said, "Why, doctor, this looks like deliberately putting her in the grave." I told him that I was not a surgeon but had done amputations and if he did not care to risk it, I would do it myself, as I was sure she would not die. He did the amputation and the patient lived for four years in perfect comfort, except for the loss of the leg.

These two cases are only two of thousands who foolishly "put off till tomorrow what should be done today." It is this same inadvertence that makes havoc of all things desirable.

We who are specially interested in the welfare of the people are at times disheartened by the apparent indifferent manner in which our time, money and knowledge are set at naught. Professional conscience, our safe convoy, urging and prodding us, is the only excuse we can allege for keeping eternally at it. Slang, though rightly abhorred, is now and then the real stuff in urging people to play a worthwhile fact. Denham says:

"The sweetest cordial we receive, at last,
Is conscience of our virtuous actions past."

So, my friends, let us confiscate, which translated, means let us not abandon but seize and appropriate to the public use every recognized discouraging and restraining obstacle.

"To the which my duties
Are with a most indissoluble tie
Forever knit. (Shak.)

It is hardly conceivable that people of this age should let carelessness or "the apathy of despair" in their natures lead them to leave events to take their own course. Even if these unwelcome incidents do not happen in their own persons, the pleasure of caring for the common good should and would compensate them to the fullest limit. "There is a spirit in man; and the inspiration of the Almighty giveth them understanding." (Job. 32:8.)

R. Angus Smith, writing to Florence Nightingale, July 7, 1859, said, "It seems to me that the greatest want among nurses is *devotion*. I use the word in a very wide sense, meaning that state of mind in which the current of desire is flowing toward one high end. This does not presuppose knowledge, but it very soon attains it." It is just this kind of sentiment of the heart that we must bring into this work of impressing our warnings by tongue and type. "They that sail in the middle can make no land on either side."

I invoke the earnest and intelligent cooperation of physicians and others to bring about and keep this increasingly important matter constantly before the people through some organized effort. The newspapers, always interested in whatever is best for the common good, will cheerfully and enthusiastically lend their valuable aid; and no one thing is of more genuine worth in promoting personal and social betterment than the part furthered by the press. This, in my opinion, is a cogent reason for taking newspaper men into membership in any collective body we may organize to fight cancer. They are usually intelligent, kind hearted, interested and active, and while they may not know much about diseased conditions, they do know more of other things about which we are more or less ignorant and which are quite necessary to succeed in this work that must flow perennially from the heart. It is the identity of heart interests—humanistic devotion—that is to culminate in the supreme good. We have to overcome apathy, ignorance, stinginess, and many other unforeseen obstacles are to be blocked or bumped out of the way. And, in this connection, it may not be burdensome to state that the greatest nonplussing circumstance or obviating fact is the prevailing educational

methods of our higher civilization—the ultra refining of artistic feeling or aesthetic cultivation is taking the place of religious character. There is too much virtuosity and too little virtue.

Ignorance, like tuberculosis and cancer, is the curse of God. Knowledge, which alone can offset it, is the wing wherewith we fly to heaven, to paraphrase the words of another. To meet this intolerable situation will undo some of our service and comfort. Sacrifice means to devote with loss or suffering. The man or woman who does not surrender something for the good of others is never happy, because happiness does not consist in having and enjoying—the animal instinct—but in sharing with others, the spirit of love, which is devotion. Not for ourselves, but for others is the only ennobling compensation in this life and the surest lift to the eternal joy that awaits the resurrection. It not only fixes devotion and elevates character in this world—it gives the earnest faith that alone fits us for the final survey. I feel it, you feel it; then why not begin now to assure your own devotion and your neighbor's freedom from the umbrage of cancer?

"Thou, therefore, whom thou only canst redeem,
Their nature also to thy nature join
And be thyself men among men on earth." (Milton).

SOME OBSERVATIONS ON THE NATURE AND TREATMENT OF CANCER.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.

The nature and treatment of cancer is a problem that seems always with us. In the minds of many there is impatience because the problem has not been completely solved and because progress in solving it has been slow. The exact cause of cancer has not been found, but much light has been thrown on the nature of cancer by modern laboratory research. The treatment, too, has improved by modifying the operation to suit the type of cancer and by the recognition of radio-active agencies, such as X-ray and radium, that have undoubtedly a distinct place in the treatment of certain forms of malignant tumors.

That the cause of cancer has never been found should be no source of confusion. As a matter of fact we know very little about the cause of anything. When the cause of a be-

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nign wart or mole is discovered the great step will have been made to unfolding the cause of cancer. Viewed in a wide way from a biological standpoint, there is no more reason to wonder at failure to discover the cause of cancer than the failure to discover the cause of life in any of its various manifestations. The discovery of the cause of disease by so-called specific bacteria does not account for the origin of the bacteria themselves. A growth on the tip of the nose, whether it be malignant or benign, is merely a part of the general biologic processes involved in growth of the body. We know, however, many laws and many more or less connected facts that aid in our conception of malignant tumors and in methods of attacking them.

The weight of opinion of the best authorities at present seems to be that cancer in human beings is not caused by any specific micro-organism. To be sure, there are isolated partisans of the general theory that cancer is caused by micro-organisms. Some of them are men of great ability. It is possible, too, that some such theory may eventually be proven. At present, the direct cause of cancer, like the direct cause of any benign tumor, is unknown.

Some of the recent laboratory work concerning the etiology of cancer has attracted much attention. Perhaps the most interesting that has appeared is by John W. Nuzum, of Chicago, who, in *Surgery, Gynecology and Obstetrics*, of August, 1921, presents experimental work in the transplantation of mouse cancer, in which he has isolated a minute micrococcus. This was done with careful and painstaking laboratory technic to prevent the probability of accidental contamination. Nuzum has succeeded in a few instances in causing typical cancer in a mouse by the injection of this micrococcus in pure culture without the presence of transplanted cancer cells. Injected along with cancer cells it seems greatly to accelerate the growth of these cells. The medium for the culture of this organism is human ascitic fluid containing a small bit of kidney or brain tissue. It may be mentioned that this culture medium has proved a source of considerable puzzlement to some observers who have attempted to isolate the cause of common colds, the organism causing acute anterior poliomyelitis, or the germ of influenza. Ascitic fluid and tissue culture media can not be

sterilized by heat or chemicals, and often precipitate forms which show as minute round bodies. Such bodies, however, have none of the functions of bacteria and cannot transmit any disease.

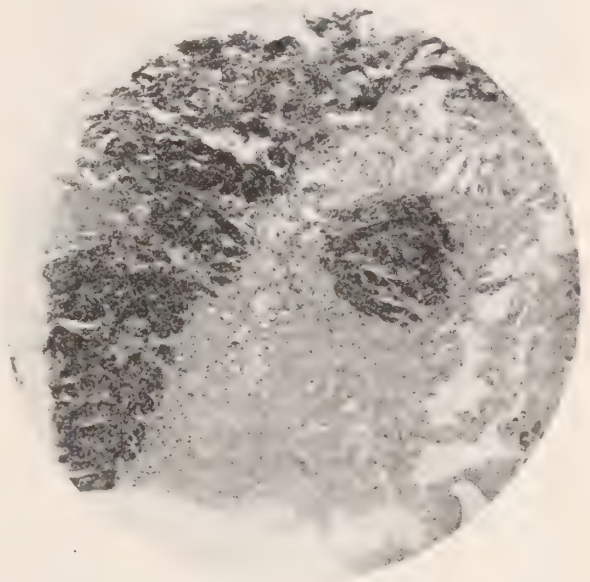


Fig. 1.—Photomicrograph of a tumor from the breast of a patient 41 years of age (Miss M.) The patient had noticed a small movable lump in her breast for several months. The physical signs seemed to show that the tumor was benign. Following the general rule to make frozen section of every breast tumor of a woman over 35, frozen section was done and a cancer was seen beginning at one end of what was apparently a benign tumor. Photomicrograph shows a distinct cancerous growth advancing into tissue that is benign. This is evidently an example of cancer developing in a previously benign tumor. (X-70).

Several years ago Peyton Rous, of the Rockefeller Institute, in New York, succeeded in producing definite sarcoma in chickens by an ultra-microscopic virus which was capable of passing through the finest filter.

The work of Dr. E. F. Smith, of the Agricultural Department, in the disease of plants called "crown gall," has attracted much attention. His experiments have been duplicated by others. I. Levin and M. Levine, in the *Journal of Cancer Research*, for July, 1920, give the results of their experiments with crown gall in different types of plants. They, like Smith, were able to reproduce a tumor by the injection of a pure culture of a bacillus which is called *bacterium tumefaciens*. This can be done with considerable regularity, but a growth produced in this way is not malignant and the relation between the benign crown gall of plants, which does not materially effect the life of the plant and which is caused by this bacillus, and the malignant

crown gall of plants, which is not caused by this bacillus, is similar to the relation between benign and malignant tumors in human beings.

It seems probable that if there is a relation between a micro-organism and cancer, it is due to the indirect effect of its irritation, such as we know is caused by chemical, mechanical, or thermic agents.

A. J. Ochsner, of Chicago, has earnestly espoused the theory of an infectious micro-organism in cancer. He has produced numerous statistics to show that cancer comes from some micro-organism found in filth and manure and he claims that, in countries where food is cooked or carefully washed, cancer of the gastro-intestinal tract is less frequent than in countries where raw food contaminated with manure is ingested. The obvious answer to this is that, if a micro-organism causing cancer is rather constantly associated with manure and filth, we would expect cancer of the colon and rectum to be very common and cancer of the stomach to be relatively rare, because the gastric juice destroys most germs. The facts, however, show just the reverse, for cancer of the stomach is more common than cancer of the colon.

We do know, however, that there are certain indirect factors exerting a very marked effect on the etiology of cancer. Chronic irritations have long been known to predispose to cancer. Certain kinds of irritation in the middle aged or the old seem more likely to cause cancer than would other kinds of irritations. The effect of tobacco smoke on the lips and tongue is well known; cancer of the skin following the wearing of a charcoal belt, cancer of the scrotum in chimney sweeps, cancer of workers in paraffin, and the experimental production of epithelial tumors by the injection of such materials as scarlet red, are all examples of the very prominent part that irritation has in cancer.

The effect of heredity has not been fully settled. While many authorities claim that heredity has no influence in the causation of cancer, the extensive experiments of Maud Slye, with mice, in which numerous generations of mice transmit cancer to their progeny, are exceedingly suggestive. It appears to be true that cancer, as we know it in human beings, is not contagious nor infectious.

In order to appreciate the effect of irritation on the etiology of cancer, let us briefly

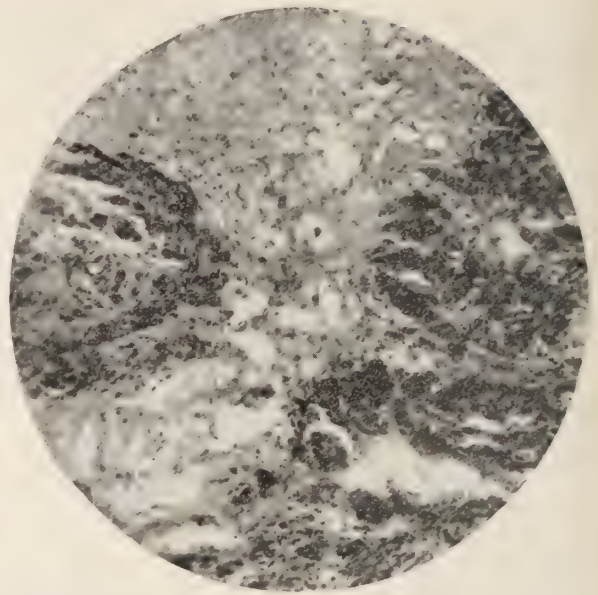


Fig. 2.—Photomicrograph of the same area shown in Fig. 1, a higher magnification. (X 150).

consider the structure of cancer. A malignant tumor is essentially a growth of immature tissue cells. As a rule, the greater the immaturity, the more malignant is the cancer. In these immature cells the cycle of life has been restricted and the changes in the cell growth are hurried and incomplete. We can usually recognize cancer by the apparent immaturity of its cells, though the chief test is the invasion of tissue in which these cells do not normally belong. We rarely see true mitotic figures in normal tissue except in the testicle, but in cancer mitotic figures and particularly irregular mitotic figures which show rapid and incomplete processes of growth are common. As a rule, the greater the number of mitotic figures, the greater is the immaturity of cells and consequently the more malignant is the cancer. Even in the absence of mitotic figures irregularity of the nuclei in size and shape suggests immaturity and malignancy.

It is usually impossible to tell a malignant tumor by the examination of one or two cells. A number of cells must be examined and, more important still, the relation of masses of these cells to the neighboring tissue must be observed. The key-note to cancer growth is anarchy. Immature cells that grow without law or order, without regard to the neighboring tissues, constitute cancer.

We may see, then, the significance of the relation between irritation and cancer. Irri-

tation usually constitutes a slight injury and even a slight trauma must be repaired by the production of new immature cells. If these cells go through their normal cycle of life, they naturally become mature and the repair of the injury is accomplished. If, however, some of these immature cells never reach maturity, but produce other cells that also have an immature life cycle, we have cancer. Why the cancer cells do not follow the laws of growth of normal cells we do not know—but we are equally ignorant *why normal cells follow these laws*. There is evidently a very narrow dividing line between the normal and the abnormal growth of these immature cells, when they seem to stray from the straight and beaten path. If we could imagine a condition of the human body in which there was no injury or irritation of tissues and no necessity for repair, cancer in man would not occur.

Cancer varies greatly in type and in life history just as trees do. We may have a large oak or a small willow sapling and if it were necessary to cut down trees, we would fit our method of procedure to the size, kind, and number of trees. So in cancer we must adjust our therapy to the type of cancer. A superficial skin cancer may often be readily cured by a limited and simple operation, whereas, operation for cancer of the breast or stomach is a much more radical and formidable procedure. Even cancers of the same origin may sometimes with advantage be treated differently, depending upon the virulence and the stage of the growth.

A. C. Broders, of the Mayo Clinic, has done excellent work in the spinous cell type of squamous cancer. (Fig. 3.) He has found that when there are many "nests" or "pearls" the cancer has a relatively low degree of malignancy, but when there are few or no pearls the malignancy is very great. He has made four grades of this squamous cell type of cancer. The practical bearing of his work is that when cells of this type of cancer approximate closely to maturity by showing many pearls, the operation need not be so radical as when the pearls are few in number. This is but one of many examples where the knowledge of pathology of tissues is of great practical aid to surgeons.

As to the treatment of cancer, it can be summed up in the admonition of early removal. This removal must be intelligently

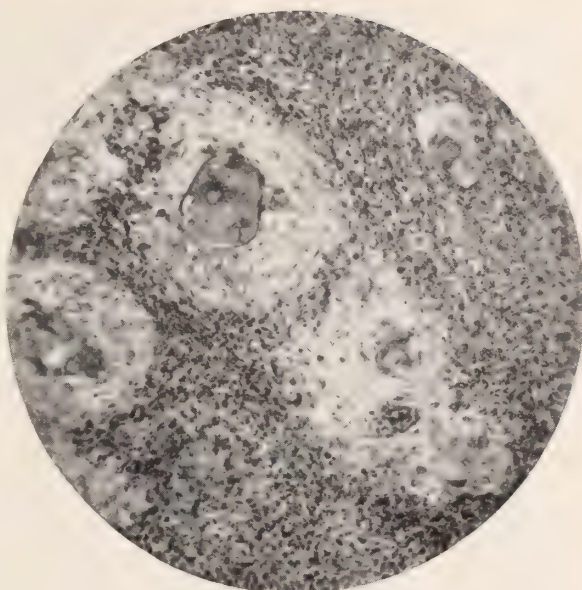


Fig. 3.—Photomicrograph of a spinous cell type of squamous cancer. The picture shows a number of "pearls" or "nests" which are characteristic of a milder type of cancer. These show a tendency to maturity. The more "pearls" or "nests" in a spinous cell type of cancer, the less the malignancy. A. C. Broders has called attention to this. (X 125).

undertaken. As Bloodgood has so often said, the earlier a diagnosis of cancer is made the more difficult it is, but it is infinitely more important for the patient that an early diagnosis be made and a proper operation done than for the growth to be watched until the diagnosis is obvious but therapy impossible. Cancer of every kind is originally local in origin. There is a very small percentage of cancer, possibly not greater than five per cent., in which the growth is so malignant and the development so rapid that it is practically impossible to extirpate the cancer sufficiently early for a cure. In more than ninety per cent. of cancers an early and intelligently applied radical operation should produce a cure in the great majority of instances. The problem for the medical profession and the public to solve is securing an early extirpation for every malignant growth.

This does not mean that an extensive mutilating operation should be done on every suspicion, but it does mean that every growth should be seriously considered and, if necessary, a frozen section made to determine its nature. An incision into a suspected malignant growth should never be made unless the surgeon is prepared to follow a diagnosis of cancer by an immediate operation. If the incision is made and the tumor proves cancerous, a delay of

even a few hours may cause implantation of the cancer cells into the fresh wound. The fact that cancer is nearly always painless in the earlier stages often causes neglect in treatment.

As we know that many types of cancer travel by the lymphatic channels, the importance of warning the patient to refrain from massage of the suspected growth or rubbing on a liniment is very obvious. Such procedures naturally tend to promote early and diffuse metastases. I have seen more than one inoperable cancer of the breast where the rapid growth was doubtless due to osteopathic or chiropractic manipulation or to the rubbing on of a liniment to absorb the lump.

In treating cancer it is essential for the surgeon to be at least somewhat acquainted with its pathology. A squamous cell cancer can often be satisfactorily cured by a comparatively limited operation, particularly when the growth is excised with a sharp electric cautery. Cancer of the breast and cancer of the lip of the more malignant types require a more radical operation. The principle of block dissection should be used wherever possible and the cancer should be manipulated no more than is necessary to accomplish the dissection. In this way the original site of the cancer with its extensions is removed in one mass. The wound should be frequently flushed with salt solution to wash away any cancerous cells that may have been extruded from the cancerous tissue during the dissection. Drainage should always be used in extensive operations for cancer as the presence of the draining tube promotes an outpouring of the lymph which tends to carry the cancerous cells through the drainage tube instead of absorbing them through the lymphatic channels.

There are many pathological facts that are of great aid in the treatment of cancer. Extensive basal cell cancer of the face, for instance, is exceedingly difficult to cure by the ordinary methods of excision. (Fig. 4). This type of cancer does not metastasize, though the cells are smaller than the spinous cell type and are exposed to the lymphatics in the same way as the spinous cells are. It seems logical to account for this failure to metastasize by the assumption that the basal cell cancer cannot grow unless it destroys the natural resistance of the tissue to its cells. This seems to be accomplished only in the

immediate proximity of this cancer. With these things in mind, I have, in two very extensive basal cell cancers of the face that had destroyed a considerable portion of the bones of the face and had existed from ten to twenty years, transplanted flaps of skin and subcutaneous tissue from a portion of the body at some distance from the cancerous growth. The cancer was excised with the electric cautery and the flap, usually from the chest, was outlined with a long pedicle at the time of the excision of the cancer. The flap was gradually dissected up every few days so as to develop the blood supply in the pedicle. As soon as the slough caused by the cautery had separated from the site of the cancer, the flap was transplanted and fitted snugly in position. One of these patients who had been operated on by several excellent surgeons and who had had radium and other treatments in both competent and incompetent hands, has apparently been cured by this procedure. At least there has been no recurrence of the growth for a period of about eighteen months. The other patient, with an equally extensive affection, has had no recurrence where the raw surface of the flap fitted to the raw surface left by the excision, but in one area of the wound where this was mechanically impossible, there was recurrence. Subsequent operations have rendered

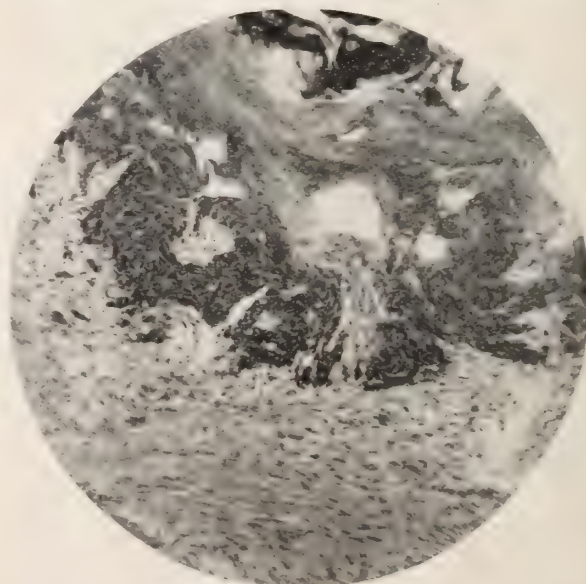


Fig. 4.—Photomicrograph of a basal cell cancer. (X 155). This cancer arises from the deeper layers of the skin; it is a so-called "rodent ulcer." While it does not metastasize, but grows from a common center, it will destroy life by continuous erosion. Unlike the spinous cell type, it seems incapable in producing metastases in the lymphatic glands. (See text).

the patient free from recurrence for the last two months.

The benefits of X-ray and radium in the treatment of cancer are marked in many cases. Too much should not be expected of them and every cancer that can be removed by a properly performed operation should be excised, unless the physical condition of the patient forbids. In certain types of malignant growth, as in lympho-sarcoma where surgery is utterly hopeless, radium in large doses is exceedingly beneficial and occasionally seems to be curative. Cancer of the cervix uteri I now treat entirely by radium, as it appears to give as satisfactory results as a radical operation and is much less dangerous. In cancers of the body of the uterus, operation should always be done as radium appears to have but little effect here. This may be due to the fact that radium is particularly destructive to endothelial cells and in the cervix probably blocks the extension of the cancer by destroying the lymphatics. Whether this is a correct explanation or not, it is certainly true that radium is effective in cancer of the cervix where operation is less effective, and that radium does but little good in cancer of the body of the uterus where operation is highly satisfactory. In certain types of cancer, especially cancer of the breast, intensive X-ray treatment two or three days before operation, seems to be beneficial. I believe that this is better than giving routine post-operative X-ray treatment, which, in my experience, has not been satisfactory.

PUBLIC HEALTH AND THE SCHOOL.*

By ENNION G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner.

I share with every specialist the belief that his particular line of effort is the one in which the most notable recent advances have been made: and this is a most excusable delusion, for the past twenty years have witnessed medical developments far beyond the wildest surmise of past generations.

But let us look calmly at the development of preventive medicine and endeavor to recall what it meant when most of us were students, and I am sure that even the most bigoted partizan of his own particular line will admit that the change has been astounding. A generation ago, of all branches of our profession, that

which dealt with prevention was the least understood and received the least consideration. It is now the best known and its appreciation is by no means confined to members of our profession.

The discoveries of Pasteur opened an empire greater than the one which Columbus gave to the world. He demonstrated beyond the shadow of a doubt how diseases are caused and how they may be transmitted. He predicted the possibility of making all communicable diseases to disappear from the earth. The world was slow to comprehend the importance of his discoveries and has been tardy in using the practical knowledge that has been a consequent of his findings. This should not cause surprise or induce disappointment, because the possibilities of preventive medicine are so great that people who disbelieve may easily be pardoned.

Public health efforts to be successful must have the support of the public. Health officers are impotent in the face of adverse public sentiment. Morbidity and mortality statistics are not interesting reading for the general public, and unfortunately the efforts of health officers may be obtained only from such compilations.

The private practitioner can be appraised more specifically. If he is successful, grateful patients sound his praises; if he is a failure, the headstones in the cemeteries are mute witnesses to his lack of success. His is a positive branch and his results are positive. Preventive medicine is, as its name implies, negative; and those who practice its specialty are gauged by the curious who study tables, ignored by the many who are neither friendly nor unfriendly, or bitterly opposed by the densely ignorant who unfortunately form an appreciable portion of the body politic everywhere.

As a consequence of this ignorance or lack of interest, the prerequisite for the development of public health work must be education. The people must be made to understand that communicable diseases can be made incommunicable through individual or community effort, that quarantine is a feeble makeshift and would not be necessary if an intelligent public could be made to understand how to care for itself. When this intelligence is created, when this education is effected, two results have been accomplished. The people who

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

understand will want to care for themselves; and, knowing to what extent public effort is needed for individual protection, they will be anxious to have the activities of their State Health Department widened and to have local health agencies working under its direction.

Public opposition to the extension of public health efforts, or public inertia, must not be too severely condemned. We must realize that prior to this generation little or nothing was known about the causes of communicable diseases or their prevention. A health officer was supposed to be one who would endeavor to check a prevailing epidemic; the idea that he was to *prevent* an epidemic did not occur. If the health officer should promptly quarantine or isolate the victims of the epidemic he would, in the popular estimation, have done all that mortal man could have been expected to do.

This statement seems today grotesque, but only the youngest men in this room are too young to remember when this conception of public health work was not the popular one. As a natural consequence of that conception, health work was left entirely to physicians; and, since epidemics were fortunately of comparative infrequency, health officers were employed on part time or per diem basis.

The event which changed or did more than any other thing to change public opinion in this field was the amazing result of the work of Gorgas, at Panama. To take the most pestilential region of the world, with an annual death rate of one in five for its total population, and convert it into a health resort with a death rate twenty-five per cent less than the death rate for continental United States, to cut the local death rate by nineteen-twentieths—that was an achievement so miraculous that it served to focalize and crystallize attention.

Virginia, I am glad to say, was one of the first States to appreciate the full possibilities that had been demonstrated and to realize its obligations to its people. In 1908, the State Health Department was reorganized and its appropriation increased from \$4,000 to \$40,000 and its officers were put on full time rather than part time duties. The doctors of Virginia, with comparatively few exceptions, showed at once a disposition to co-operate. Through their help the department was enabled to ascertain with relative accuracy the number and distribution of cases of communi-

cable diseases, and consequently could inaugurate intelligently a widespread campaign of general education, inculcating newly discovered facts concerning the causes of diseases and methods of prevention.

One of the first developments was the establishment of a laboratory to aid doctors in the diagnoses of communicable diseases. This was a satisfactory experiment which has developed into a large and increasingly important division of the health department.

Our first year's investigations led us to believe that there had been not less than 14,500 cases of typhoid fever in Virginia during the twelve months. It was known to every man who had paid the least attention to preventive medicine that typhoid was among the easily preventable diseases; and, therefore, we made our drive on typhoid and its companions in the filth-borne class. In 1920 there were but 267 deaths from typhoid in all Virginia; and it is safe to say that the total of typhoid cases fell below 3,000—our reported cases were far below that number.

I shall not occupy your time with a description of each development of health activity in the State department. Thanks to the engineering division, there was not during the past year a single outbreak of typhoid that could be traced to a public water supply. Thanks to the tuberculosis work, the death rate from the white plague is steadily declining in Virginia. Here I might pay this distinct compliment to Virginia: Our State is one of the most liberal in the Union in relation to tuberculosis work, and it has the largest negro sanatorium in the country.

Efforts were made to reduce the cost of diphtheria antitoxin and other biological products and make them more available to physicians and their patients.

We then see that in the early years of the Health Department the activities were devoted largely to prevention of disease. In 1914 we carried on an incidental piece of work that was destined to mark an epoch in public health and open up a new area with an unlimited field of activity. We were to realize that prevention was only one branch of the public health and that promotion of the standard of health was another obligation the Government no less owed to the people.

In 1914 Professor W. H. Heck, holding the chair of Education at the University of Vir-

ginia, asked us to aid in determining the physical condition of the children in one of the Virginia counties. Orange was selected, because it offered a central location and a more or less typical territory. Dr. Roy K. Flannagan was placed in charge of the work, and he was assisted by representatives of the International Health Board.

I will summarize these findings: The school population of Orange was recorded as 4,008, but the figures furnished by the teachers indicated that only 2,609 children could answer the roll call when all were present. Seventy per cent of the white children and sixty per cent of the colored children who were enrolled were present when the examinations were made.

This study disclosed less eye troubles in village or town schools where window arrangements were better than in the strictly rural schools with their cross lights, the former showing 14.2 per cent for white and colored combined, and the latter giving 27 per cent for white children and 23 per cent. for colored.

On the other hand, curiously enough, children living in villages showed a higher percentage of diseased teeth than those in more rural sections. The percentage in the villages reached the startling figure of 86. The strictly rural white schools showed 47 per cent of the white children with defective teeth and 28 per cent for the colored. Negro children, however, showed a much higher percentage of glandular troubles. One-fourth of the colored children had enlarged neck glands; less than one-eighth of the white children were so affected.

Hearing defects were found to be more prevalent in the village schools, where the percentage was 12.5; in the rural schools it was only 4.5. Enlarged tonsils were found to be more numerous with the negroes, who had a percentage of 40 against 30.5 for white children. Adenoids were much less apparent in the graded white schools, the percentage being 26 as contrasted with 40 in the one-room white schools and 37.5 in the colored schools.

A distressing feature of this examination was the disclosure that so many children were evidently undernourished. Orange County has such climatic and topographical advantages that it might reasonably have been presumed to be unusually healthful; yet 25 per cent of the white children and 37.5 of the colored were marked below par.

The report dealt at length with the need for efficient health organizations in the country districts, for better school houses; but it made most evident the need for stronger children, with rosy cheeks and bright eyes instead of anemia and vacuity. This survey created more than State interest. It was the first of its kind and it attracted national attention. The report was published by the United States Department of Education.

In 1915 six more counties were surveyed, and defects were found in the following percentage: Eyes, 23; hearing, 3.4; tonsils, 50; adenoids, 37.5; teeth, 62.5; glands, 40; anemia, 26.7.

To those of you who served as members of examining boards during the process of the selective draft law or who have read the reports of the surgeons-general of the army and navy, these figures will seem to be, as they really are, an accurate prophecy. What the draft board later revealed about the young men of the country, we in the State Health Department already knew about the children of several Virginia counties.

It was that knowledge that led Col. Junius F. West, in 1916, a member of the State Senate, lately nominated to be Lieutenant-Governor, to introduce a law requiring the physical inspection of school children and making it incumbent upon the teachers to qualify themselves for this duty and also to fit themselves to teach simple hygiene and sanitation. In 1920 this law was amended and improved, so now certain corrective work can receive financial aid from the State.

It is my chief purpose in this paper to speak of public health and the schools. I have briefly reviewed the general development of the work in the State, and will now try to show just the part that the schools are to play in carrying out the aims and purposes of public health endeavors. We have spoken of how the health work as a public activity must wait on public sentiment and this in turn upon the education of the individuals.

The law advocated by Col. West has provided the machinery to carry on through the public schools the systematic course of instruction in the principles of prevention. This course is to be approved by both the State Board of Health and the State Board of Education.

In addition to the regular curriculum, a

scheme of Health Leagues has been organized in many of the schools whereby a spirit of rivalry and competition in principles of personal hygiene are taught by actual practice of them. Again, in virtually every school room of the State, there is posted a placard containing two rules which, if followed, will prevent that large group of diseases carried by the secretions of the mouth and nose. In this group are measles, whooping cough, diphtheria and scarlet fever.

For many years health officers have tried to control these by quarantine, but with little success. The reason is plain. Measles and whooping cough are most communicable in the incubation period, or before the diseases are recognized. Diphtheria and scarlet fever have more mild and unrecognized cases and carriers than clinical cases. We see how futile it is to control them by isolating only the recognized cases, although, of course, isolation helps and should be continued. We control the diseases carried by secretions of the mouth and nose on the same general plan as typhoid, or diseases carried by excreta are controlled. They are prevented by considering all human excreta as potentially dangerous and safely disposing of it. We must control all diseases carried by secretions of the mouth by considering all mouth secretions as potentially dangerous and must prevent their transmission from one mouth to another. This is done on the same basis as the prevention of accidents in the very successful "Safety First" movement. To reduce the chances, the incidence is proportionately reduced. We can see that the diseases conveyed by secretions of the mouth can be controlled by teachers far more successfully than they can by health officers and doctors.

In that other division of health work, the promotion of the standard of health, the teacher and the school have a great field of usefulness. Last year the teachers and nurses inspected more than 127,000 school children, yielding results somewhat similar to those obtained in the previous inspections to which I have referred.

I would not have you think that this physical inspection required of the teachers is a medical examination. It is merely a "looking over," to determine defects plainly apparent. It is a testing of the eyes by Snellen's Chart; of the hearing by the ticking of a watch or a whisper; looking in the mouth for defective

teeth; weighing and measuring the child and comparing the figures with a standard chart; and some observation of the general appearance. Any teacher of average intelligence and slight instruction can easily determine glaring defects. There is only one bit of advice the teacher or the school nurse is permitted to give. If she discovers defects, she must advise the parent to consult a physician and find out what is the matter with the child. In the rural districts the doctors are realizing that these physical inspections are not, as some of them at first thought, an invasion of their field. I do not wish to be considered as criticizing even those who held that opinion, because they were justified in protesting when they believed that incompetent laymen were attempting to give medical advice, but that misunderstanding should no longer exist.

We come now to the most serious problem of all. How are we to have corrected this vast number of physical defects? It is a conservative estimate to say that 20 per cent of the funds spent on education is wasted because of physically defective children. Children repeat grades year after year—hold back the normal children—waste the time, energy and nerves of the teachers—are handicapped themselves from receiving an education—and are liable to more serious physical ailments in later life. These defects and handicaps can be corrected or removed. The medical profession has the knowledge and skill. To get together we must steer between two dangers. The one is failure to give relief and the other the encroachment by the State upon the legitimate prerogative of the licensed practitioner.

So far, we have been conducting clinics in the closest co-operation with the local doctors and dentists. In the last six months, clinics have been held in eight counties; over four hundred children have been operated upon for tonsils and adenoids. We do not encourage clinics even partially supported by the public except where men competent to perform the work cannot be secured by the parents of the children; and to relieve the public clinics of an eleemosynary character, those who attend them have to pay for the services of the clinician.

The West law does not provide funds sufficient for free medicine or surgery; and I would not advocate that it do so. However, it is a reflection both upon our Government and

upon the profession, to permit the continuance of the situation revealed by school inspection and by the draft. I feel confident that those representing the Government and those representing our profession, inspired by the broad spirit of humanity, can get together and remove these burdens and handicaps from these children and future citizens.

A sound mind in a sound body is a truism older than the Christian era. We are today trying to make it something more than a phrase. To ignore the body while training the mind is a relapse to the Middle Ages. I am proud that Virginia is in the fore-front of the States that are doing this work for their young citizens. Furthermore, I entertain the profound and most gratifying conviction that this wise departure, this most excellent effort, will have the hearty support and the unstinted co-operation of the eminent physicians who form the Medical Society of Virginia.

MEDICAL EDUCATION IN VIRGINIA.*

By STUART McGUIRE, M. D., Richmond, Va.

The agitation of the question of the consolidation of the two State supported medical schools in Virginia has been due to two facts, first to the shortage of physicians, dentists and pharmacists in the State, and second, to the obvious inability for either the Medical College of Virginia or the Medical Department of the University of Virginia to improve and expand so as to meet the requirements of the future, unless one or the other of them received the united support of the professions and the undivided financial aid of the Legislature.

Doctors, dentists and pharmacists are not luxuries but necessities, and the fact that there is today a lack of a sufficient number of each in this State is officially testified to by the Commissioner of Health, and is a matter of common general knowledge.

Unless some radical change is made in our educational system, the situation will become more acute. The two State supported schools cannot be counted on to do in the future what they have done in the past. Owing to steadily increasing requirements, they have reached the limits of their financial ability, and in place of improving and expanding they are now struggling for existence. The Medical College

of Virginia, despite recent additional appropriations from the Legislature, is barely able to retain its Class A rating, and the straits of the Medical Department of the University of Virginia are shown by the fact that thousands of dollars had recently to be raised by solicitations among its teachers, students and alumni in order to enable it temporarily to carry on its present work.

Medical education is no longer profitable. It has ceased to be a business venture and has become a public philanthropy, which must be supported by private benefactions or State appropriations. Virginia cannot expect other States to do for her what it is clearly her duty to do for herself. She must in justice to her people see that they are provided with an adequate number of well qualified physicians, dentists and pharmacists, and obviously the most economical and effective way to do this is by maintaining one large first class school.

Governor Westmoreland Davis, in his message to the last General Assembly, said in part:

"There are two State aided medical schools in Virginia. There should be, as in other States, but one. The Medical College of Virginia receives \$70,000 each year and the University of Virginia \$96,175 each year for the biennium period.

"The best thought to be had upon the subject is that these State aided institutions operate to their own detriment in the same sphere of usefulness and appropriations made by the State should be to one institution rather than be divided between the two. I am impressed from the standpoint of efficiency and economy of administration that it would be well for the Legislature to take cognizance of the condition to which I have referred and, that in aid of the adoption by the State of a broad constructive policy in the selection of a single medical school which will alone receive the support of the State, a committee of nine be authorized to investigate the advisability of having one State aided medical school in Virginia rather than two, and assisted by trained experts in medical education without undue expense to the State, to study medical education in Virginia and upon the basis of such study and after all the facts and conditions are understood to make to the Governor for transmission to the General Assembly such recommendations as they think wise to the end that medical education in Virginia be unified and the whole situation be made as efficient and logical as possible."

As a result of this message the Legislature passed a bill creating a Commission on Medical Education in Virginia and appropriated a sum of \$2,000 to defray the expense of its work.

The Commission organized on June 20, 1920. Its members personally inspected the buildings and equipments of the Medical Department of

*Read before the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

the University of Virginia, at Charlottesville, and of the Medical College of Virginia, at Richmond. It secured the advice of outside experts, learned the experience of other States who had had the same problem to deal with, and ascertained the opinions of members of the Virginia State Board of Health and State Board of Medical Examiners. At a meeting of the Commission on Medical Education in Virginia in Richmond, on February 3, 1921, the following extracts from a letter written by Dr. Henry S. Pritchett, President of the Carnegie Foundation, were unanimously adopted as expressing the views of the Commission:

1. At the present time the State of Virginia is subsidizing two medical schools, one, in Charlottesville, the other, the Medical College of Virginia, in Richmond. This situation is a reproach to the medical intelligence of the State and an injustice to the people of Virginia. It should cease as soon as possible.

2. Neither of these medical schools, between which the State support is divided, has at present the resources to conduct a modern medical school adequate to meet the needs of the State, even upon an economical and modest basis.

3. Any medical school in Virginia, supported in whole or in part by the State, should be a part of the University of Virginia and under the control and direction of its governing board and president.

4. Although a few divided medical schools still exist, medical opinion is practically unanimous in the conclusion that to offer the first two years of a medical curriculum in one place and the last two years in another is not only a waste of funds, but results in a diminution of the effectiveness of the school as a whole. A medical school, half of which is in Charlottesville and the other half in Richmond, is no solution of the problem of medical education in Virginia.

5. If, therefore, the State of Virginia is to support medical education at all, such support should be given to a single medical school situated either in Charlottesville or in Richmond, and in either case, under the direction of the University of Virginia.

The passage of these resolutions left but two questions to be settled by the Commission, namely, the location of the school and the terms and conditions of consolidation.

The Commission at its last meeting, by a majority vote, recommended Richmond as the future home of the proposed single State aided medical school. The reasons which influenced the decision in favor of Richmond rather than Charlottesville may be summarized here as follows:

1. Population sufficient to furnish adequate clinical material.

2. Residence of specialists available as clinical teachers.

3. Location of State owned college and hospital buildings.

4. Proximity of headquarters of State and city boards of health and other related State and city activities.

5. Opportunity to teach dentistry and pharmacy in addition to medicine.

6. Probability of new sources of financial support.

7. Occupation of field which, if left vacant, would lead to future competition.

The final conclusions of the Commission were as follows:

1. There should be one State supported medical school.

2. It should teach medicine, dentistry and pharmacy.

3. It should be located in Richmond.

4. This school should be formed by the merger of the Medical College of Virginia with the Medical Department of the University of Virginia, through the unconditional transfer of the property of the Medical College of Virginia, subject only to the existing liabilities.

5. The medical school so formed should be a bona fide department of the University of Virginia, having the same academic relationship to the University of Virginia as that borne by the present Department of Medicine, and the task of organizing this new medical school in all its details should be entrusted to the authorities of the University of Virginia.

The fact has been emphasized by the advocates of Charlottesville that while the Commission was unanimous in recommending that there should be but one State supported medical school and that this school should be operated as the medical department of the University of Virginia, the Commission was not unanimous as to where the school should be located. It must be remembered, however, that this is a democratic country and that the majority is supposed to rule. The Commission was composed of carefully selected men, whose honesty and intelligence cannot be questioned and the decision of the majority of this body can no more be lightly set aside than can the decision of the Supreme Court, from which there is no appeal, although its verdict is often reached by a close vote.

The Board of Visitors of the Medical College of Virginia has unanimously agreed to accept the terms and conditions of the report, but the Board of Visitors of the University of Vir-

ginia has declined to do so, and, as a result, under the provision of the law, the Governor must transmit the report of the Commission to the General Assembly at its next regular session, with such recommendations as he may see fit to make. The refusal of the Board of Visitors of the University of Virginia to accept or modify the report of the Commission places the burden of proof for the wisdom of its action on that body. The responsibility also rests on it for throwing the question of medical education into the political arena where it promises to be an issue which will rival prohibition and woman suffrage in the interest, and perhaps, in the bitterness it will create.

Until the Commission on Medical Education in Virginia adopted its final report, I tried to keep an open mind and to refrain from any partizan action. After the work of the Commission was concluded I have felt free to meet propaganda with propaganda and most of you are familiar with the activities of my associates and myself. I have no excuses or apologies to offer for what I have done, for I am conscious of being actuated by no personal motives or local interests but am convinced I am availing myself of the greatest opportunity that will ever be offered me to be of service to my profession and to the people of my State. It is perhaps unfortunate that a matter of controversy should be introduced into the scientific session of our Society. I can only say that the initiation did not come from me, but from a representative of the University of Virginia.

Up to this point I have largely confined myself to an effort to prove that there should be but one medical school in Virginia, a fact which is emphasized by Governor Westmoreland Davis in his message to the Legislature, is endorsed by both the majority and minority report of the Commission, and is substantiated by Mr. Flexner, Dr. Pritchett, Dr. Bevan, and every expert on medical education who has testified on the subject. I have done this because my greatest fear is that the Legislature, which has the final determination of the question, may in a spirit of compromise continue to divide the support of the State between the two existing schools, which in my opinion would be the greatest calamity that could possibly befall medical education in Virginia. Although we may divide on the question of the location of the school, let us unite in the demand that there shall be but one.

In the short space that remains to me because of the time limit of this paper, I cannot even summarize the argument in favor of Richmond and opposed to Charlottesville as the location of the proposed school. Most of my audience are already fairly well informed on the subject. If such is not the case, it is no fault of those who advocate opposing views. I can only attempt first to combat the sentiment which has been created especially in the minds of the non-medical graduates of the University, against what has been cleverly and most misleadingly termed the brutal dismemberment of their alma mater. It must be recalled that only eight years ago the President of the University, Dr. E. A. Alderman, the Dean of the Medical Department, Dr. R. H. Whitehead, and the Board of Visitors of the University, all earnestly advocated the very plan which is now proposed and it only failed of accomplishment because of lack of funds to put it into effect. Surely sentiment cannot be relied on if eight years ago it favored a movement under the term "expansion" and now condemns it under the term "brutal dismemberment."

It must further be recalled that if the recommendations of the Commission are carried into effect nothing will be taken away from the University, but much will be added both of material assets and opportunity for usefulness. Finally, it must again be stated that the new school will be absolutely under the control and direction of the authorities of the University.

The University of Virginia is now advocating and establishing extension courses in other lines of work in various parts of the State. Certainly it is not consistent in claiming it cannot conduct a medical department in Richmond without losing its integrity. Surely it should not limit its work to Charlottesville, but take the broad view of the Dean of the University of Tennessee, who said: "The campus of our State University, The University of Tennessee, is the State of Tennessee."

Let us next see what other State Universities have done when faced with the same problem we have in Virginia today.

It has been found that there are twenty-one State Universities which give complete medical courses. Eight of these have separated the entire medical school from the University and located it in a large city, and four have

split their courses, teaching the first two years at the Universities and the last two years in large cities. Of the remaining nine Universities, five are located in large cities, which leaves only four that are attempting to teach medicine in small towns. In a discussion which resulted in the transfer of the Medical Department of the University of Colorado, from Boulder to Denver, Dr. Charles M. Meader said in part:

"It seems fair to conclude from the facts given that no institution except a State University is able, or at least is attempting, to give its clinical years in a city under 100,000 population; that twelve State Universities have preferred to separate their medical schools by distances varying from 10 to 300 miles from their campus in order to gain clinical facilities, compared with only four which have attempted to carry clinical teaching in a small city in order to retain the school on the campus. The dates of organization of these four schools are as follows: Virginia, 1827; Michigan, 1850; Vermont, 1853; Iowa, 1869—dates when medical education differed materially from that of the present day and the competition of other good schools was far less. Of the four, Michigan and Iowa only are strong schools. It is believed that it may be fairly held that if a decision must be made between University atmosphere on the one hand and extensive teaching facilities on the other, the experience of other schools is overwhelming that a medical school can reach a high standard of excellence without the former, but cannot rise above mediocrity without the latter."

The advocates of Charlottesville in their arguments ignore the result of the experience of twelve State Universities who have found it wise to separate their medical schools from the campus of the Universities and establish them in large cities, and base their contention on the fact that Michigan and Iowa have been successful in conducting medical schools at the seat of universities in small towns practically no larger than Charlottesville. They claim that Virginia can do what other States have done, but as mortifying as it must be to confess it, this is not true. Virginia, compared with Michigan and Iowa, is financially a poor State and cannot afford to appropriate the money that they have found necessary to spend in order to teach medicine, dentistry and pharmacy under artificial conditions. This is at once apparent when figures are considered.

Michigan has spent \$2,688,500 on its medical buildings and is now engaged in construction which will cost \$1,500,000 more. During last year it spent \$288,414.95 on its school of Medicine, \$88,948.92 on its school of Dentistry, \$10,792.86 on its school of Pharmacy, and \$269,-

445.95 on its clinical hospitals; or a total annual expenditure of \$657,602.68 for medical education.

Iowa has spent over \$1,000,000 on its medical buildings. During last year it spent roughly \$200,000 on its school of Medicine, \$100,000 on its school of Dentistry, \$16,000 on its school of Pharmacy, and \$700,000 on its clinical hospital: or a total annual expenditure of \$1,160,000 for medical education.

The absurdity of Virginia attempting to follow the methods of Michigan and Iowa is apparent; the necessity of adopting the plan in practice in the majority of other States is obvious. The school must be located where clinical teachers are available and where clinical material is cheap and abundant.

Finally, the evidence of expert testimony. There are three national organizations in the United States which are recognized as authorities on questions of medical education; they are the Rockefeller Foundation, the Carnegie Foundation and the Council on Medical Education of the American Medical Association. Naturally, one of the first acts of the Commission on Medical Education in Virginia was to endeavor to secure their assistance and advice. Unfortunately, all three of these bodies, for one reason or other, declined to express an opinion at a time when the weight of their authority would have been almost a determining factor in the question at issue. Later, when the work of the Commission was virtually completed and the minds of its members practically made up, all three of these bodies unofficially took sides. Mr. Abraham Flexner, Secretary of the Rockefeller Foundation, came out favoring Charlottesville, and Dr. Henry S. Pritchett, President of the Carnegie Foundation, and Dr. Arthur D. Bevan, Chairman of the Council on Medical Education of the American Medical Association, came out favoring Richmond.

Naturally, the advocates of Charlottesville persistently quote the opinion of Mr. Flexner. No one questions his honesty, intelligence and experience. He is undoubtedly one of the most famous experts on medical education in this country, but he is an idealist and a theorist, and he is one of the group of men who by radical and extreme measures have so rapidly advanced the standard of medical education in the United States as to produce the present shortage of doctors which threatens to become

even more serious in the future. Besides, Mr. Flexner's opinion is a qualified one and is based on the provision which he expresses in his brief as follows: "There must be legislation such as has already been adopted in Iowa and in Michigan for the purpose of facilitating the flow of clinical material to the University hospital." As has already been shown, this would cost a price that is prohibitive in the present state of the finances of Virginia.

The other two experts on medical education, whose names and positions have previously been stated, advocate Richmond. They are authorities equally as eminent as Mr. Flexner and are regarded by many as men of more practical minds. Dr. Henry S. Pritchett, President of the Carnegie Foundation, says:

"The opportunity of the University of Virginia to serve the cause of medical education and to take a commanding position in the training of medical practitioners in the region in which it stands, lies in the development of its medical school in the City of Richmond. In my opinion, this development can be had without the sacrifice of scientific relations with the University or of scholastic ideals."

Dr. Arthur D. Bevan, Chairman of the Council on Medical Education, says:

"My own point of view is that in determining the location of a medical school, the question of securing the proper amount of teaching material is of more importance than the question of the proximity of the medical school to the other departments of the University."

But after all, these outside experts do not know as much about the needs and conditions in Virginia and how they can be met with the existing resources as do the men who live and practice in the State, and the physicians, dentists and pharmacists of Virginia have expressed their opinion in no uncertain voice. A referendum vote recently taken resulted to date as follows:

	Favoring Richmond	Favoring Charlottesville
Physicians	1,461	322
Dentists	559	19
Pharmacists	984	90
Total.....	3,004	431

The State Pharmaceutical Association, at its last annual meeting, unanimously passed a resolution endorsing Richmond as the location of the proposed single State supported school.

The State Dental Association, recently at its annual meeting, unanimously passed a similar resolution.

The State Medical Society, while it may not

be a unit, should take like action by a large majority vote at this meeting. The question is now one of practical politics and a knowledge of the position of the three official organizations representing the pharmacists, dentists and physicians of the State, as well as the expression of the views of individual members to their representatives in the Legislature, should have a potent influence in the final action of the General Assembly of Virginia.

THE RELATION OF MEDICINE TO LAW.*

By JUDGE F. B. HUTTON, Abingdon, Va.

The subject assigned me this evening is The Relation of Medicine to Law.

I regard it as a great compliment to me that I should be invited to address this association of physicians. I was reared in a doctor's shop, my father was a physician, I have a brother who is a physician, and a son who is a physician, and I would have been a physician myself had my father permitted me. I have always had the idea that I might have been a good one. There is no profession for whose members as a body I have a higher regard, and for many of its members, individually, I have even a higher regard than I have for the profession as a class. In my judgment, next to the minister, there is no man who should and does stand higher in public esteem than the cultivated, trained Christian physician. They are, and should be, men of greater influence than members of any other profession or calling, outside of the ministry, because they come in closer contact with the family than the members of any other profession. There is no more useful citizen than the high, clean doctor. His obligations are great, and his opportunities for doing good greater.

If I understand my subject, it is the relation which the medical profession bears to the administration of justice in the courts of the country. It is a maxim of the law, and, I may say, one of the most familiar principles in the law of evidence, that the opinions of witnesses are in general irrelevant. Reasoning is the proper function of judge, jury and counsel, and it is not a part of the normal function of a witness. To allow witnesses to draw conclusions or inferences is to usurp the province of court and jury. Even when witnesses are limited in their statement of facts in their

*Address before the Southwestern Virginia Medical Society, at its annual meeting in Pulaski, May 12, 1921.

own knowledge, their bias, ignorance, and disregard of the truth are obstacles which too often hinder the investigation of the truth. If it were generally allowable in legal procedure to permit witnesses to state not only those matters of fact about which they have knowledge, but also the opinion they might entertain about the facts in issue, the administration of justice would become little less than a farce. To the general rule, however, there are many exceptions.

This is true of every class of witnesses as to certain things, such as identity, speed of railroad trains and automobiles, values, handwritings, quantity, weight, measure, time, sanity of persons, distances, velocity, form, size, age, strength, heat, cold, sickness, health, temper, anger, fear, excitement, drunkenness, veracity, general character, etc., and it is often very difficult to determine when and when not an ordinary witness may give his opinion. An ordinary witness is never permitted to give his opinion when it requires such special study and skill as to distinguish the expert from the ordinary witness. No ordinary witness would ever be permitted to distinguish between the forms of disease and consequences of disease.

Another rule which excludes opinions is that a witness is never permitted to give his opinion or conclusions of facts testified to before a jury where the court and jury can draw conclusions from the facts as well as the witness. The exceptions to the general rule that witnesses cannot express opinions, but can only state facts, arise from the necessities of a proper administration of justice, the general rule being

(1) That the inference, conclusion, or judgment, is competent in proportion as it is shown to be simple, reflex or instructive, and is, on the contrary, rejected according as it is found to involve the element of mental operation, whether the reasoning is induction, deduction, or a combination of the two.

(2) As above stated, a particular conclusion, inference or judgment is excluded where the jury are capable of reasoning on the matter to a tenable conclusion, and is always received where they cannot do so, either (a) because they have no adequate major premise of experience, or (b) because they cannot from inability to gather, or adequately to weigh, at their true value, the facts into a reasonable, satisfactory minor premise.

(3) The conclusion, inference or judgment

is accepted where it relates to a fact which is collateral, or relatively unimportant; and is rejected where the fact sought to be established is either in issue or so material thereto as to involve the substantial rights of the parties to a jury trial.

Opinions are never permissible if the facts can be ascertained and made intelligible to the jury, or if they are such that men in general are capable of comprehending and understanding, and, therefore, the ordinary affairs of life can never be subjected to expert testimony. Necessity, however, may call for an opinion, such as in the case where it is impossible to give the jury a fair or intelligible understanding of the matter in controversy. In all such instances it is received in the furtherance of justice. The opinion of witnesses possessing peculiar skill is admissible when the subject matter of inquiry is such that inexperienced persons are not likely to prove capable of forming a correct judgment upon it without such assistance. It is often necessary, as we have seen, in the administering of justice to admit the opinion of ordinary witnesses as evidence. Therefore, if the non-professional witness must on grounds of necessity sometimes be allowed to state the inferences which irresistibly rise in his mind from those minute facts which he cannot detail, there are still stronger reasons for receiving, under proper limitation, the opinion of those skilled in matters of every particular trade, science, or art. In many cases, the subjects under investigation are wholly unfamiliar to the jury and to the court, and, if opinion evidence were excluded, there would be no adequate mode of arriving at any satisfactory conclusion. The law recognizes this fact, and the courts have adopted the rule of admitting the opinion of witnesses when the case so far partakes of the nature of a science as to require a course of previous habit, or study, in order to obtain a knowledge of it; and, therefore, the court permits the witness, when it is made clear to the court that the witness has shown himself to be skilled in the business or profession to which the subject relates, to testify as an expert and give his opinion from either a state of facts given to him, or from his own personal examination of the subject about which he is called to testify.

In the discovery of truth, which is the great purpose of the law, every department of hu-

man knowledge should be made to assist, and therefore the physician must, when it becomes necessary, apply the knowledge of medicine to the requirements of law. Both the student of medicine and the student of law are equally interested in a knowledge of what is called medical jurisprudence, that is, legal or forensic medicine. Courts try every character of cases, and among them cases affecting life and reputation and property, and when it becomes essential for a proper trial to appeal to medical knowledge, such cases are termed in law *medico* legal cases, and the science of the application of medicine to cases of that character is called medical jurisprudence. Both lawyers and doctors, therefore, should be acquainted with medical jurisprudence.

The physician often is placed in an attitude where he must give publicly a professional opinion, and, whether qualified or not, must then do his best in the position of a medical witness to aid the cause of justice. How important it is then to every doctor, whether he be a general practitioner or whether he follows a special line, to acquaint himself with the principles of forensic or legal medicine! There are many cases brought before courts which cannot be settled in any other way except by an appeal to medical knowledge, sometimes to one department of medicine, and sometimes to another, and it not infrequently happens that many departments of medicine are simultaneously called into requisition in order to arrive at a proper decision. It is of the utmost importance to a physician when he gets on the stand that he should thoroughly understand what he is talking about. When he has carefully conducted the methods of scientific research, there remains this duty upon him, of giving the results of his investigation to the court in the form of testimony, and, whether the doctor will or not, if he attends the case which is under investigation, he is compellible to testify, not only to the facts which he saw and which came under his observation, but the conclusion reached by him from his investigation.

The foregoing description of the qualifications necessary to constitute a normal medical witness in a court of law should not deter a physician from entering on the study. Of course, it is not expected of any doctor, nor is it within the mental capacity of any individual, that he should be at the same time

versed in all the principles of medicine and jurisprudence, or that he be able to answer correctly all the possible questions that might be asked, or remove all medical difficulties that might occur during the progress of a trial. The law does not expect anything more of a physician than an average knowledge of his profession and of that which falls more peculiarly under the province of a medical witness. Of course, the more the physician knows on the subject about which he testifies, the better witness he will make. The duties of a medical witness are distinct from those of a physician or surgeon. Great authors of forensic medicine all draw this distinction. The physician or surgeon looks only to the treatment of the disease, and bends his energies to the saving of life, but the province of the medical witness is to aid the law in fixing guilt on the perpetrator of the crime, or to rescue an innocent person from a false charge. Often he is required to determine the cause of death, whether it is natural or violent. "Some members of the profession," says the distinguished English author, Dr. Taylor, "have been inclined to look upon medico-legal practice as an unnecessary addition to their ordinary duties, but there are few who have long engaged in the practice who have not found themselves occasionally placed in situations of difficulty from the accidental course of cases demanding legal investigation."

"It is obvious then that the duties of a medical jurist are of a very highly responsible nature, and of great importance to society, while the cases which call them into exercise are purely accidental. The physician who thinks himself secure in the most retired corner of America is liable at any moment to find himself suddenly summoned as a witness in a trial to answer questions which perhaps during a long period of practice he has been lead to regard as wholly unimportant. Under such circumstances it is scarcely possible that he can avoid exposing his inexperience, and to hear the lawyer examining him ask: '*Have you ever attended to or thought of these subjects before?*'"

It is a frequent charge against members of the medical profession that they are the worst witnesses on matters of both fact and opinion. I do not believe this is true. Those who make the charge forget and overlook the great difficulty and complexity of the many questions which are put to the medical man compared to

those put to other witnesses. But this is true: if the medical man does not know the subject about which he is undertaking to testify, the skilled attorney, without any knowledge whatever of medical jurisprudence, will expose his ignorance to a curious public.

I once, along with other counsel, defended a case of murder, where a very prominent man, while intoxicated, slipped into his father's room and got a shot-gun and walked out into the cornfield and deliberately shot down and killed the best friend the prisoner had. There never had been any difficulty between them before of any character, and our defense was that the prisoner was a *dipsomaniac*. Drunkenness, as is generally known, is no excuse for crime, but if the drunkenness has produced a diseased state of the mind, then a criminal act perpetrated by the prisoner might admit of exculpation either on the ground of insanity, or of the want of sane consciousness at the time of the act. The question arose in that case whether the prisoner was simply drunk, or whether he was a *dipsomaniac*, that is, whether he had a diseased mind. The experts for the defendant testified from the facts and circumstances detailed of the life, character and conduct of the prisoner that he was a *dipsomaniac*, and that he was wholly irresponsible, in their opinion, for his act. The Commonwealth put on the stand, however, among others, a doctor of high standing in his community, who testified that there was no such disease as *dipsomania*. In the defense of the prisoner, we had gotten all the recent works upon medical jurisprudence and every other medical book that bore upon that subject, and each and all of us were perfect adepts on the subject of *dipsomania*. We had studied Beck, Taylor, Whitsett, Wharton and Stille, Reese, and all the other authors we could get. This particular doctor who was summoned for the Commonwealth was cross-examined by Hon. Daniel Trigg, and he went over the different authors, and asked this doctor if he knew what Whitsett, Taylor, Beck, etc., said, and asked him if they were not good authorities. His answers showed clearly that he knew nothing about either the authors or what they said, and, over my protest, Mr. Trigg then asked him if he knew what Dr. Thool (Fool) said on the subject, and instead of his saying he knew no such author, he answered that he did not remember exactly what Dr. Thool

(Fool) said. Of course there was no such author and no such book.

Another case which came under my observation was the illness of a prisoner in jail. The prisoner was charged with murder in the first degree and the court had declined him bail. He then got sick in jail, or pretended to get sick, and the defense summoned six eminent physicians to examine the prisoner, and the Commonwealth summoned six. The six physicians summoned for the defendant testified that his physical condition was such that longer confinement in jail would be detrimental to his health, and the six other physicians, equally eminent, testified that in their opinion there was nothing the matter with him. This conflict of medical opinion was astounding to me, and afterwards I met one of the physicians summoned for the Commonwealth, Dr. Samuel Sayers, of Wytheville, Virginia, and asked him how it happened that there was such a conflict in the testimony of the doctors in that case, and he said that when the physicians for the Commonwealth examined the prisoner, they found that he had a very high pulse. I believe he told me 120, but they found no cause for the high pulse, and with the great fund of commonsense that great and eminent physician had, he suggested to his associates that they count each others' pulse, and they found that there wasn't a man among the six that didn't have as high a pulse as the prisoner, and that the quick pulse was due to no disease in the prisoner, but simply to the excitement of the occasion, both on the part of the prisoner and the physicians, and they, therefore, concluded that there was nothing the matter with him. Had the other physicians counted their own pulses, they perhaps would have agreed with the six that did count them.

This divergence of opinions of doctors who are called for the different sides of a case does not, in my judgment, reflect in any way upon the profession, for it is perfectly natural for the doctor who is called for the Commonwealth to give to the Commonwealth all the assistance possible, and the same is true of the professional witness called by the defendant, both of whom are equally honest, but this divergence of opinion makes it the duty, therefore, of a medical witness, or perhaps I should say a medical jurist, as they are called in the medico-legal works, to cultivate a faculty of minute observation of medical and moral cir-

cumstances. In other words, as judges have sometimes said, when a medical man sees a dead body he should notice everything. For instance, as Mr. Taylor says, "He should notice whether any part of it is cold, or warm, whether the limbs are cold and rigid, or cold and pliant." That would be of no earthly advantage to him from either a medical or surgical view, but it might enable him as a witness to tell how long the person had been dead.

This conflict of opinion of medical witnesses has made me conclude, after more than forty years of the practice of my profession, either on the bench, as prosecuting attorney, or in general practice, that there should be legislation on the subject of medical experts; there should be appointed in every circuit by someone, preferably by the judge of the Circuit Court, a competent physician, whose duty it should be to examine every suspicious case of violent death, or suspected poisoning, of infanticide, etc., whenever called upon to do so by friends of the family, the local physician, the attorney for the Commonwealth, or the prisoner, and he should be paid for his services by the State, but he should not be a representative of the State, but of the court. He should, further, have the right to call to his assistance, if desired by him, any other appointee of a different circuit to assist him in making his examination.

This subject has engaged the attention of some of the ablest minds in both the professions of law and medicine, but, so far as I have observed, without any definite results.

There have been suggestions made that there should be one or more men in the State, who should be state officers, physicians of the highest education, experience and training, who should devote their entire time and attention to this duty, and that they should be paid an excellent salary. Such an office might be beneficial if kept out of politics, but, in my judgment, the better way is as I have suggested, and this method is not wholly free from objection. These appointees, if possible, should be the only medical witnesses examined, but in Virginia, under our Constitution, there is no way to prevent any prisoner from summoning as many experts as he may desire, the Constitution providing that "in all criminal prosecutions, a man hath a right to demand the cause and nature of his accusation, to be confronted with the accusers and witnesses, to

call for evidence in his favor, and to a speedy trial by an impartial jury of his visinage, without whose unanimous consent he cannot be found guilty."

You see, therefore, some of the difficulties which would attend legislation of that sort; but, notwithstanding those difficulties, I am clearly of opinion that there should be legislation removing as far as possible the unjust criticism of experts, especially those who testify for the defendant.

It has been more than twenty years since I appeared in the case where the defense was *dipsomania*. The prisoner was found guilty of murder in the second degree. The jury believed from their verdict that there was no such thing as *dipsomania*, and the poor fellow, who should have been acquitted on account of his diseased mind, was made to suffer and to die in the penitentiary, when he was a typical *dipsomaniac* and, for that reason, should not have been incarcerated in the penitentiary. I do not believe that any doctor educated in this day, or in recent years, would deny under oath, or give as his opinion, that there is no such disease as *dipsomania*. That physician, who was a good practitioner, had doubtless never read a line of medical jurisprudence from any author; he had his general notions that there was no such disease; that there were simply drunkards and habitual drunkards, and people who had gone crazy from long continued use of alcohol, but that a man could have been born with a diseased mind, which would be absolutely normal until fired by liquor, but who would travel through fire and blood to get liquor when those periodical spells would come upon him, was to his mind nothing but the fancy of lawyers in order to acquit a guilty prisoner. He had not prepared himself thoroughly upon the questions bearing upon the disease about which he testified. This he should have done in order to further the ends of justice, and to avoid the criticism he received then and I am giving him to-day.

Another thing perhaps I ought not to say, but yet I am going to do so, and which I have heard some physicians say they have been taught, is that when a medical witness cannot answer a question propounded to him "he should jump behind technicalities." I think the medical expert should avoid the use of every technical expression in giving his testi-

mony. Pomposity and pedantry always expose the witness to ridicule and contempt. There is nothing in which a lawyer cross-examining a witness delights more than to have the witness talk in language which the average man cannot understand.

I once, as Commonwealth's Attorney, was prosecuting a case for murder by poisoning, when the defense put a doctor on the stand, summoned from another state, who came into the court house dressed in a Prince Albert suit, silk hat, carrying a gold headed cane, and wearing a watch fob that would weigh something near a quarter of a pound, and he never used a word that the jury understood from the time that he began to testify until he closed, and when he was turned over for cross-examination, I asked him one question only, and that was this: "Doctor, I do not know anything about what you have told the jury, and I do not suppose that they know, but I would like to know if, in your opinion, the deceased had been afflicted with all the things that you have described, would she not have died within half an hour?" His evidence was utterly worthless to the prisoner before the jury, and the prisoner was convicted of murder in the first degree. Whether he testified to the truth or not no one ever knew, because neither judge, jury nor counsel knew what he was talking about.

The medical witness, as every other witness who wishes to make an impression, should maintain a quiet, dignified and composed demeanor on the stand, never exhibiting any irritability or temper, however much he may be provoked by opposing counsel. He should always rely upon the counsel for the side upon which he has been summoned to make objections when the questions are improper. He should answer in a quiet manner, giving his explanations in the same way, and never make an effort to answer any question to which there is objection until the court passes upon the objection, and, above all things, he should never be afraid to answer any question about which he has no information in the negative, frankly admitting that he does not know.

When I left the University of Virginia and was asked a legal question, I answered promptly one way or the other. I then thought that I knew the law, but after working in my profession as assiduously as possible, and giving to it all the study of which I am capable for more than forty years, I now know that

I do not even know the beginnings of that great science, much less all of its ramifications and intricacies.

I do not know whether the same rule would apply to the doctor, but from my experience with and observation of medical witnesses, I have found that those who know the most are the most ready to admit that they cannot answer every question propounded, and those who know the least are most ready to answer any question asked, lest they might appear not to be skilled.

I never saw this more completely exemplified than once in a civil action, in which I was the trial judge, in which damages were claimed for an assault, and there was a doctor, who is living today and practicing medicine in one of our cities, who answered Attorney J. L. Kelly, now the President of the Court of Appeals of Virginia, that the normal temperature of a man was 76. I thought when he first gave that answer that it was simply a slip, but it was soon demonstrated by other questions propounded by Judge Kelly, which arose by reason of that answer that he did not even know, though he was testifying as an expert, the normal temperature of a human being.

Therefore, I, with my unqualified approval of its sentiments, conclude my remarks of the evening in the language of one of the most distinguished writers of medical jurisprudence:

"That the students of medicine and law are equally interested in a knowledge of forensic medicine, as it is termed, and it should require no argument to show its importance to the members of these professions, because the doctor cannot entirely evade its claims, although he may seek to do so, since the very nature of his profession, together with his assumed public position as an accredited physician, render him liable at any moment to be confronted with a case involving the intricate question of homicidal, suicidal, or accidental death, of infanticide, of criminal abortion, of rape, of drowning, and of numerous other cases which must necessarily depend for their elucidation upon the physician who had previously given his professional attendance in the case, and who must give his evidence before the court."

I again wish to express to you my appreciation for the compliment you have paid me in extending the invitation of your Association to make this address, and also to express my

pleasure and thanks to the Medical Association of this city for this splendid banquet, and for giving me an opportunity to meet and greet again my personal friends among you, and to have had the honor and pleasure of meeting those of you whom I had not theretofore met.

ATROPHY OF LYMPHATIC AND TONSILLAR TISSUE BY RADIUM AND X-RAY.*

By C. AUGUSTUS SIMPSON, M. D., Washington, D. C.

For some years it has been known that lymphatic tissue is very much more susceptible to X-ray and radium than connective tissue or bone. The thymus gland may be taken as a typical example of a lymphatic organ. Another example is the tonsil. Both glands are composed almost entirely of pure lymphatic tissue, the fundamental pathology being essentially the same.

In 1915, I did some experimental work on half grown guinea pigs and rabbits to see what the effects of X-ray would be on the thymus gland of these animals. The controls were pigs and rabbits of the same litter, approximately the same size and weight and living under the same conditions. The technique employed was to give 3 points Hampson radiometer each day for 8 days through 1 m.m. aluminum, pastille on the skin. My apparatus consisted of a 16-inch coil using 9-inch spark gap, 5 milliamperes current, Coolidge tube target 10 inches from the animal.

One week after the completion of treatments, the control and treated animals were killed, the thymus gland removed, and sectioned by Dr. Hunter, of George Washington Medical School. Microscopically, the treated glands could be divided into a capsular and an interstitial hyperplasia, both increased to a marked degree leading to a distinct sclerosis and enormous reduction in the amount of thymic tissue. The capsule was in places increased to six times the thickness of the capsule in the untreated gland.

The veins, arteries and capillaries were widely engorged with thrombi and organized blood clot and the walls of the vessels were much thickened, all pointing to future organization of the vessel contents. In addition to this, there was a decided thickening of the

trabeculae and a great increase in the reticulae, all taking place at the expense of the thymic cells; in other words, a rapid and unmistakable atrophy of the lymphatic tissue associated with an increasing amount of connective tissue and sclérosis of the entire gland.

Satenstein and Remer have recently studied the varying sensitiveness of the different tissues of the body to X-ray, the degree of sensitiveness being most marked in the lymphocytes and less marked in the fibroblasts and connective tissue cells, both being more resistant to the ray than neoplastic elements (epithelium), as cancer, which in turn was much less resistant and more sensitive to X-Ray than normal tissue. In saying it is less resistant to the ray, I mean that the tissues are unable to withstand the heavy doses of ray so that involution, absorption and atrophy, in the case of lymphoid tissue, results without permanent damage to the surrounding and very much more resistant connective tissue.

From the Rockefeller Institute and *Journal A. M. A.*, January 22, 1921, a report has recently been made that will prove a landmark in the treatment of hypertrophied tonsils. This article coming from such an ultra-scientific and ethical institution and men is not to be questioned or doubted. Briefly, it told of the treatment of forty-six patients, ranging in age from 3½ to 45 years, by exposing the area of the tonsils to a massive dose of X-ray. Two weeks later distinct shrinkage of the hypertrophied tonsil was noted. This continued from one to two months, at which time the tonsillar crypts had opened and drained and in all but a few the exudate had disappeared from the throat, leaving the tonsil smooth, pale and of a healthy appearance.

Cultures were made from the crypts in forty of the forty-six patients before and at intervals after the treatment began. The common organisms of the throat were not affected. Thirty-six of the forty patients showed hemolytic streptococci and, of this number, the tonsils of thirty were free of this organism four weeks after treatment began. As the atrophy of the tonsil progressed the crypts became more shallow, drained better, the streptococci disappeared and the lymphatic tissue became displaced by connective tissue. The hypertrophied tonsils had undergone a shrinkage comparable to the atrophy of old age when the

*Read before the Medical Society of Northern Virginia and the District of Columbia in Alexandria, May, 1921.

gland is composed of little more than a small collection of fibrous tissue.

Viewing the treatment from the point of a roentgen therapist, the entire technique is most simple and easily accomplished in one or two treatments. The measured amount of ray over the tonsillar area is less than that given for a skin cancer and averages the quantity used in the treatment of ring-worm of the scalp, or, in other words, a perfectly safe amount of X-ray.

The part of the technique that detracts from the treatment is the fact that the target or tonsil being at least an inch or more below the surface of the skin, especially in adults, and not in a very accessible or exposed location may not receive the full amount of ray intended for it. This would entail more visits, treatments, expense, and the loss of time of at least one month or more, as such large doses of X-ray cannot be safely repeated under four weeks, at least. Another drawback to the X-ray treatment is that when one rays the tonsil the parotid gland is irritated by the ray. This is followed by a dryness of the mouth, which is disagreeable to some patients; the parotid gland may become slightly swollen and tender the day following the X-ray treatment. These symptoms disappear in two or three days.

We have seen and known these symptoms for years when treating skin cancers in the neighborhood of the ear or over the parotid gland. No atrophy or damage of the parotid could result from such a treatment for two reasons: First, the dose of X-ray is not large enough to destroy a secretory gland like the parotid; second, the dose we employ (much smaller than in cancer work), is enough to permanently damage only the lymphatic tissue and the parotid is not a lymphatic gland, an example of the selective action of X-ray and radium. For this reason, dryness of the mouth disappears in a few days with no return of the symptoms. At the same time, by giving less X-ray and applying the radium directly on the tonsil, I am getting away from this disagreeable symptom.

In order to overcome this difficulty and to be able to concentrate the rays accurately and directly on the tonsil, obviate the use of large doses of X-ray over the structures of the neck, to save time and to make doubly sure of the results, I am using a flat dermatological 30 mg.

double strength radium applicator, covered only with layer of sterile rubber tissue.

By using the unscreened applicator on the surface of the tonsil combined with three points, Hampson X-ray through these m.m. aluminum externally, I get a cross-fire of radium and X-rays which is concentrated and centered on the tonsil itself. This technique to me seems much more scientific and accurate, a surer and quicker way of reaching and atrophying the tonsil. A convenient handle is supplied with the applicator, which enables the patient to hold the unscreened radium directly on the tonsil for three-fourths of an hour. With this original technique, it is perfectly remarkable how quickly the tonsil begins to shrink and show other atrophic changes.

In one patient with a temperature of a hundred and one degrees, exudate in the crypts of the enlarged, inflamed tonsils, cervical glands on left side of the neck the size of half an orange, associated with malaise and loss of appetite, the picture was changed in one week and after a single treatment. After two weeks, the tonsil was the only part of the entire naso-pharyngeal field that did not share in the very acute, red, inflamed condition that involved every other part of the posterior nares and pharynx.

The enlarged glands had disappeared in three weeks and only a small part of the right tonsil was to be seen when the anterior pillar was pulled to one side and close inspection of the fossa was made. On the opposite side (left), not complicated by enlarged cervical glands, the enlarged bogey, protruding tonsil that entirely filled the space between the anterior and posterior pillar has entirely disappeared, leaving the pillars free, normal and uninjured.

The fossa once filled with lymphatic tissue and tonsil is now an empty smooth cavity in which an almond could be placed. On the floor of this cavity a small fibrous mass, the size of a pea, is to be seen. It is all that remains of the capsule and connective tissue frame work of the tonsil. This is the picture that is still to be seen four months after a single treatment.

A mild reaction which turns white and resembles the application of silver nitrate and is approximately the same size and shape as the radium applicator is to be seen on the tonsil

four or five days after the treatment is given. This slight superficial radium irritation disappears in two or three days. It sometimes involves one of the pillars, which it never damages, a splendid example of the selective action of radium and X-ray, which, as every one knows, is the very foundation and key stone of all radio-therapy. To be able to produce atrophy, and destruction of a radio-sensitive cell (lymphocyte, tonsil cell), and no atrophy or damage to a fibrous or connective tissue cell (anterior and posterior pillars), is no new discovery at all. In fact, it is a well known and easily demonstrated occurrence. If X-ray and radium did not have this selective action, the whole structure of radio-therapy would fall flat.

The dermatological flat radium applicator without filters is not only the practical applicator to use, but its advantages are apparent with the most superficial knowledge of radio-therapy. The Radium Company, of Colorado, has been kind enough to make a special applicator after my own design, that simplifies the treatment very much. It is three-fourth of an inch long, nine-sixteenth of an inch wide, one-sixth of an inch thick, oval in shape, with all corners and angles smoothed and polished. This new applicator contains 26 mg. of radium; covering a surface of the above dimensions, it gives one a considerably stronger applicator than the original double strength square skin applicator that I began working with. The radium is on the surface of the metal capsule having no aluminum to cover it and filter out the valuable beta ray and being of double strength, the strongest made, the effects of the radium rays are immediate and marked. In two weeks signs of atrophy (shrinkage of tonsil), begin and continue for two to three weeks. All of the more valuable beta rays are available, which is impossible when using, say, the popular metal capsules or needles such as are employed in uterine and deep cancer work. This metal capsule employed by gynecologists and surgeons is most frequently made of one-half to one m.m. of silver, which equals in density and filtration power two to four m.m. of aluminum. Such a filter eliminates and absorbs from fifty to ninety per cent of the very type of rays that one seeks to employ in this work. Not only does it waste from half to ninety per cent of the beta ray that is useful and needed, but it prolongs and

multiplies the duration of treatment from four to eight times.

CONCLUSIONS.

1. From the cases that I have tested this technique on and the reports from the Rockefeller Institute combined with the rather large experience of six years in atrophying the thymus gland with X-ray, I am positive that I can cause complete atrophy and disappearance of any tonsil in one to three treatments.

2. Eliminating, as it does, any suffering, operation, anaesthetic, hemorrhage and pain, it most certainly will be a popular method of removing tonsils from patients, who have kidney, circulatory, blood pressure symptoms, or, for any reason, might wish to avoid an operation.

1610 *Twentieth Street, Northwest.*

CUTANEOUS BLASTOMYCOSIS; REPORT OF CASE.*

By JAMES W. ANDERSON, M. D., Norfolk, Va.

Although numerous cases of Cutaneous Blastomycosis have been reported from various parts of the country following the discovery, by Gilchrist, in 1894, of a fungus in milary abscesses of the skin and the proof of its significance as a causative factor by Buschke and Busse, six months later, I feel that it is sufficiently rare in this section to report the following case that has come under my observation, with a brief outline of the outstanding points in the diagnosis of the condition, for probably like other rare diseases it is rare only in so far as it is not diagnosed.

The definition given by Hyde and Montgomery¹ that: "Blastomycosis is a chronic, inflammatory, infectious disease, characterized by the appearance upon the skin of a small papule or papulo-pustule, which becomes crusted and extends peripherally to form a sharply outlined, elevated, verrucous patch, situated upon a pus infiltrated base and presenting a characteristic sloping border, in which are seen minute, deeply seated abscesses," excellently describes the clinical features of the disease.

The diseases with which it is liable to be confused are: tuberculosis verrucosa cutis, vegetating syphiloderm, some cases of sporotrichosis, and the papillomatous lesions some-

*From Dermatological Clinic, St. Vincent's Hospital.

times produced by the ingestion of the bromides and the iodides.

From tuberculosis verrucosa cutis it is differentiated by its more rapid growth, the fact that the latter usually commences in childhood, has a deeper, more violaceous color, and is usually less extensive. Quite often, however, the clinical resemblance is so marked that the final diagnosis can only be made by the pathologist.

Vegetating syphilids usually have a history of syphilis, other signs of the infection including a positive Wassermann reaction, and show a tendency to papillary hypertrophy with a greenish, purulent discharge. They also occur as a rule upon the scalp or hairy portions of the body.

Sporotrichosis tends more to sluggish, painless ulcerations, which are fairly characteristic of the condition.

The papillomatous lesions caused by the ingestion of bromides or iodides frequently bear a marked resemblance to blastomycosis, but can be distinguished by their rapid growth and the history of having taken one of the drugs mentioned.

The final conclusions often can be reached only by the discovery of the fungus in the pus from the lesion.

The technique of examination for the organism is simple and should be carried out in all chronic ulcerative or papillomatous lesions where the diagnosis is in doubt.

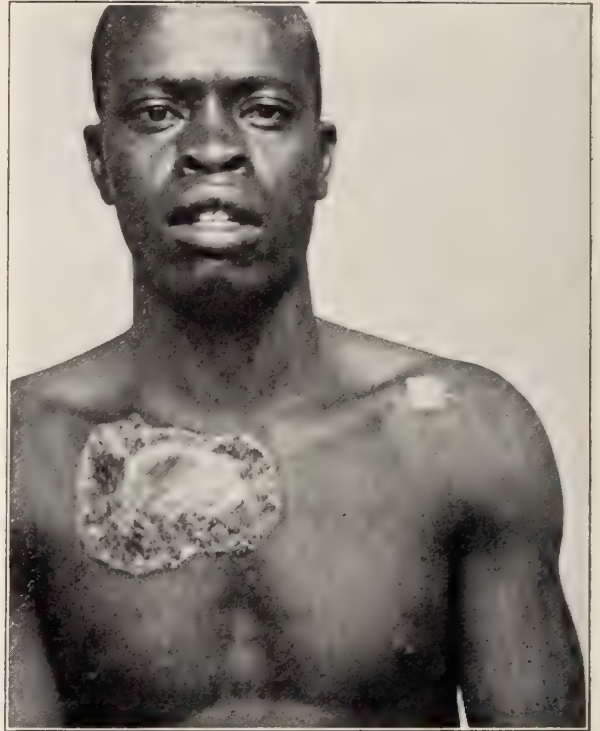
REPORT OF CASE.

J. F., negro, blacksmith, age 29, entered the Clinic at St. Vincent's Hospital, on July 29, 1921, complaining of a skin eruption on right wrist and right side of chest.

PAST HISTORY—Negative.

HISTORY OF PRESENT CONDITION—About one year ago, while working at a forge, two pieces of hot iron struck him at the sites of the present lesion, causing a burn which healed readily, leaving however a small nodule at both points. At the end of a week or ten days these commenced to ulcerate and to spread by peripheral extension. Their growth was very slow and painless except when struck against some object while at work. The lesions continued to enlarge until they reached the size shown in the photographs.

EXAMINATION—Well developed negro, in good health with exception of the skin lesions,



Lesion on chest, showing elevated borders and central scar, due to spontaneous healing.

which had reached a size that they interfered with his work.

Examination of the skin revealed two lesions, one upon the right wrist in the form of an oblong plaque about four inches in diameter, beginning just below the base of the thumb and practically encircling the wrist, giving the appearance at a distance of having been wrapped about the part. The margin was unbroken and was elevated about three-eighths of an inch, sloping abruptly to normal skin. The surface of the lesion was composed of small, horny papillomata with pin-head sized abscesses scattered through it near the margin. On pressure, pus exuded between the papillae. In color, the lesion was a purplish-red, through which was mingled yellow areas, looking as though secondary infection had taken place. There were also occasional adherent crusts which bled on forcible removal.

The lesion on the chest presented the same characteristics with the exception that the margin was not so markedly elevated and that healing had taken place in the center, leaving a firm, brown scar appearing smooth on inspection, but on palpation a slight transverse cording could be noticed.

Pus obtained from both lesions and placed on a slide with liquor potassae, at the end of ten minutes. showed numerous double contoured,



Inner surface of wrist. Lesion practically encircling part.

refractile bodies with granular centers, singly, in pairs and, occasionally a budding form corresponding to the description of the blastomycosis.



Outer surface of wrist. Lesion practically encircling wrist.

DIAGNOSIS—Cutaneous Blastomycosis.

Cultures made at the time on glucose agar were contaminated by pus cocci and, as the patient disappeared from observation, no cultural report was obtained.

TREATMENT—The patient was given 30 grs. of potassium iodide three times daily and was instructed to use a dressing of one part of Lugols solution to ten parts of water. This was to be continued until the improvement stopped and remainder of the lesion removed by X-ray. Unfortunately the patient disappeared from observation so that the result of the treatment is unknown.

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290 Monroe Building.

TREATMENT OF TUBERCULAR PERITONITIS WITH THE QUARTZ LAMP.*

By SAMUEL NEWMAN, M. D., Vienna I.
Medical Commissioner, American Joint Distribution
Committee, Congress Poland.

Seven years of starvation in central and eastern Europe worked havoc with millions of children. Every form of tubercular disease, all manifestations of nutritional disorders, are unfortunately exhibited by millions of children in the new Republic of Poland. A systematic and scientific attempt to obtain exact data and statistics on the prevalence and forms of disease among the children in Poland is now being undertaken by American medical agencies operating in Poland. In the field under my observation, the incidence of tubercular peritonitis among children in orphanages has been noticed. Undoubtedly, tubercular peritonitis occurs to a greater extent in the non-institutionalized children in Poland, for in the scheme of food provisioning they came after the school and institution children. The relationship of tubercular peritonitis to pulmonary tuberculosis and to tubercular adenitis or to osseous tuberculosis has not been worked out yet. An answer to this interesting question will be possible after the completion of an examination of a hundred thousand children, now undertaken in Poland. In visiting children's hospitals in Poland one meets with entries like these: Tubercular Peritonitis, or Tubercular Peritonitis and Pulmonary Tuberculosis.

For those in Europe faced with the problem of infant and child morbidity and mortality, its solution is already clear. It is not a problem of therapeutics, but of food, air and sunshine. Fresh air, a drop of even vitiated but boiled milk, and a ration of meat once a week will be the deciding factor between tissue decomposition and regeneration. I used the phrase "tissue decomposition" advisedly. One sees here the most frightful tuberculous tissue destruction. In a rather rich and industrial

*The data for this article was taken from the "Children's Hospital, Anny Mary," in Lodz, Poland, one of the most important institutions in Poland. Dr. Brudzinsky, founder of the Pediatric School in Poland, was associated with this institution. Dr. Newman is interested in problems relating to child welfare work and is studying pediatric methods in Poland.

section of Poland I saw a young girl of fourteen with necrosis of the sternum and sloughing of the surrounding tissue; a young boy of thirteen presented his body an actual mass of caseating tissue; every long bone in his body was pathologically fractured!

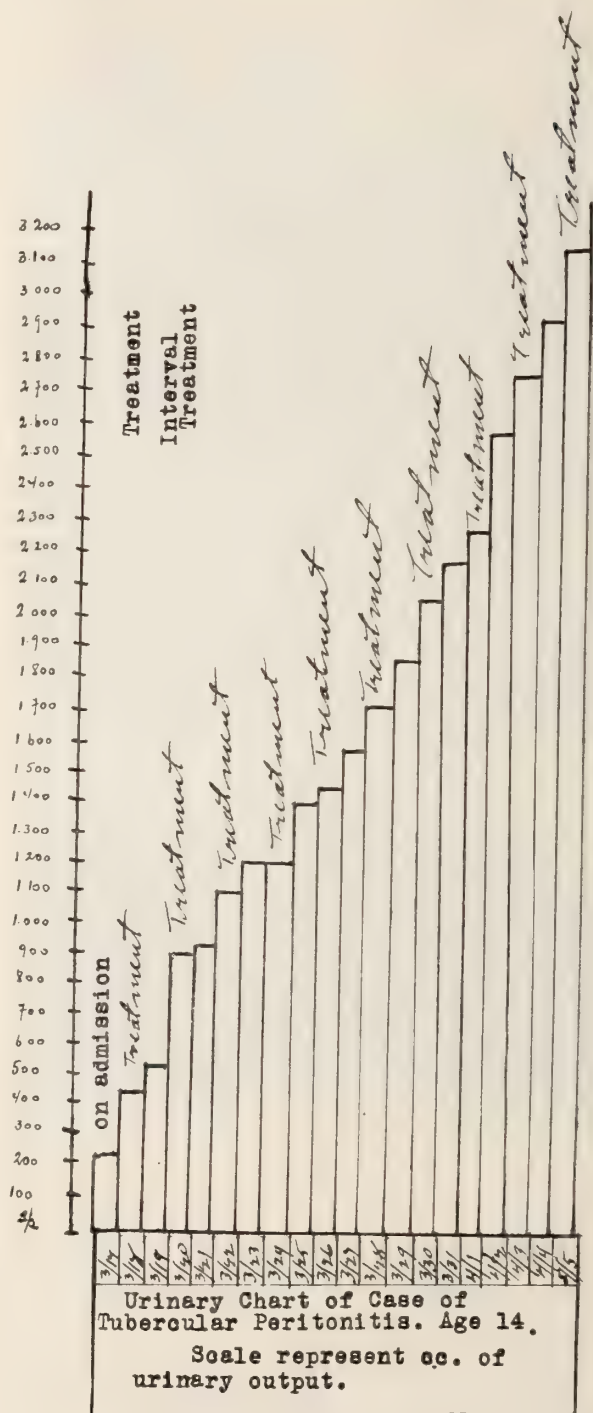
However, the therapist in the field of pediatrics has also been applying himself to problems in infant and child welfare in central and eastern Europe. Herewith, I wish to note a method of treatment of tubercular peritonitis in children in the best of Polish hospitals. The treatment consists in the application of the radiations of the Quartz Electric Lamp. Quite a considerable number of cases have been treated, burned, and apparently cured by this method that the accumulated experience allows now of a certain definite technique to be followed.

METHOD OF TREATMENT.—The *unit* of time that the abdomen should be exposed to the quartz lamp is the minute. The *unit* of distance from the lamp is the meter. The *unit* of time interval between treatments is forty-eight hours.

The patient is placed on a table directly under the quartz lamp at a distance of one meter and the rays are applied from one to three minutes. The exposures are repeated every other day, but each time shortening the distance from the lamp by a few centimeters and lengthening the time of application. After a considerable number of ray applications the safe limit from the lamp is considered to be eleven centimeters, and the longest period of exposure, ten minutes. No daily applications are practiced.

RESULTS OBTAINED.—No final claim is made yet for this method of treatment in tubercular peritonitis. In comparison to the large number of tubercular cases in Poland, a record of results obtained in a series of hundred cases is not convincing. It can be stated, however, that no more laparotomies are practiced in this hospital in Poland, that the clinical results are very rapid and even spectacular, and that a following up of the cases over a period of six months showed the treatment to be effective.

The accompanying chart shows the influence of the ultra-violet rays on the excretion of the tubercular exudate. It will at once be noticed that *pari-passu* with the treatment the quantity of urine voided daily is greatly in-



creased. Palpable mesenteric glands also melt away quickly under the influence of this treatment.

In the series of cases treated at the "Children's Hospital" in Lodz, there was pulmonary tuberculosis in addition to the process in

the abdomen and the glands. These cases also got clear of the abdominal exudate.

Like with many other new methods of treatment, no premature enthusiasm is justified. However, the treatment of tubercular peritonitis with the ultra-violet ray should find place in our children's hospitals before laparotomy is undertaken.

Seilerstätte 15.

REPORT OF A CASE OF UTERINE BLEEDING TREATED WITH RADIUM.*

By JOSEPH J. MUNDELL, M. D., F. A. C. S.,
Washington, D. C.

We frequently see cases of moderate or excessive uterine bleeding in which we can find no gross lesion in the pelvis to account for it. This type of bleeding is spoken of as pathological bleeding in the grossly normal uterus and it is merely a variation in the amount, duration, character or periodicity of the normal menstrual flow.

Heretofore, uterine anatomical lesions have been given as the cause, such as: endometritis, fibrosis, metritis, arterio-sclerosis of the uterine vessels, syphilis, tuberculosis, passive congestion due to misplacements, pelvic or abdominal tumors, cardiac or cardio-renal disease, high blood pressure, etc.

In 1908 Hitschman and Adler made sections of a large number of uteri and found hyperplasia of the endometrium, fibrosis and arterio-sclerosis of the uterine vessels present in just as many non-bleeding uteri as in the bleeding ones.

It is now generally held in these cases, that the congested endometrium is a counterpart or an exaggerated form of the normal premenstrual endometrium and though it, like the normal, is concerned in the outpouring of the menstrual blood; nevertheless, it is stimulated or otherwise affected by the same influences or substances which bring about normal menstruation. Clinical research and animal experimentation has demonstrated that that substance is the corpus luteum or the Graffian follicle. In normal menstruation, the cycle of hyperplasia and depletion of the endometrium is coincident with the cycle of the development and recession of the corpus luteum.

It seems then that in pathological, as well as in normal bleeding, some excitation or disturbance of the Graffian follicle in some stage of its development, probably the corpus luteum, is the essential factor. If this be true that pathological bleeding is only a variation of the normal and we wish to bring about its cessation, then the logical procedure is to attack the one essential element in the menstrual cycle, namely the Graffian follicle.

Next to the lymphocyte and the spermatozoa the Graffian follicle is the most susceptible structure of the body to the action of radium. Within a few hours after the administration of radium the nuclei of the Graffian follicle begin to break up and within ten days the whole structure of the follicle is destroyed.

In functional menorrhagia or metrorrhagia near the menopause, when no gross lesion, such as tumor or cancer of the uterus, can be found, the use of radium is the treatment par excellence. Dr. Leda J. Stacy, who is at the head of the Gynecological Section at the Mayo Clinic, says that its action is *specific*.

While the use of radium in small dosage in the bleeding of younger women is advocated by some, it must be used with caution and the patient should be frankly told the risk of bringing on an artificial menopause.

The diagnosis in these cases should be doubly insured by pathological examination of the uterine scrapings to rule out cancer of the body.

In the past, treatment of these cases has been conspicuous by its failure, cases have been curetted and curetted, have been treated with organotherapy, corpus luteum extract, ovarian extract, thyroid extract, pituitary extract, mammary extract, etc., with the same dismal failure until menopause intervened or else in some cases hysterectomy has been done. One intrauterine application of fifty milligrams of radium for twelve hours with the patient comfortable in bed for only a few days produces a cure in at least ninety to ninety-five per cent. of the cases.

I will report one typical case:

Mrs. H. Age 45 years. Large, healthy, well developed and well nourished woman who has always enjoyed excellent health up to the present illness.

*Read before the District of Columbia Medical Society, April 13, 1921.

Para IV, all normal births. Menstrual history was normal up to three years ago.

April 1917, she was dilated and curetted and had a trachelorrhaphy for leucorrhoea.

Beginning February 1918, she suffered with menorrhagia, periods lasting two and three weeks, until April 1919, when she was curetted. The curettings were examined and reported negative for malignancy. The excessive flow was benefited by the curettage for a few months.

When I first saw the patient in April 1920, her flow was excessive, lasting two to five weeks.

Abdominal examination was negative. Vaginal examination showed the cervix small, hard and fibrous; the fundus was about normal size and freely movable; both appendages were negative.

Various remedies were administered unsuccessfully and on June 23, 1920, at Columbia Hospital, dilatation and curettage was performed. The pathological report was chronic endometritis, no evidence of malignancy. For three months the flow was slightly improved, but then became heavy, lasting two and three weeks.

January 20, 1921, under gas anesthesia, the patient was again curetted and fifty milligrams of radium was placed within the uterine cavity for twelve hours and the patient left the hospital on the fifth day. No evidence of malignancy was reported from the curettings. The bleeding ceased immediately and has not returned and the patient in this respect is well and happy, so much so that yesterday she phoned me asking if she could not make a contribution to the Madame Curie Radium Fund.

N. B.—Date of publication, eleven months following treatment, patient reports that bleeding has not returned and that her health is excellent.

1616 Rhode Island Avenue, Northwest.

Public Health

Notes From the State Board of Health Laboratory.

The growth of the laboratory during the last 3 years may be readily seen from the following table:—

	Oct. 1, 1918 to Sept. 30, 1919	Oct. 1, 1919 to Sept. 30, 1920	Oct. 1, 1920 to Sept. 30, 1921
Tuberculosis	1,169	1,320	1,293
Diphtheria	624	1,591	2,063
Typhoid:			
Widal	982	825	899
Blood Culture		31	52
Feces			*26
Malaria	113	337	234
Gonorrhea		*537	319
Wassermann	2,323	9,308	11,046
Rabies		82	83
Total	5,211	14,031	16,015
Miscellaneous	109	55	26
Intestinal Parasites	1,812	2,239	1,148
Total Diagnostic	7,132	16,325	17,189
Water:			
Bacteriological	1,158	1,800	2,767
Chemical	14	36	44
Total Examinations	8,304	18,161	20,000

*Previously included with miscellaneous.

We are constantly endeavoring to improve our service. The latest addition in this respect is the night examination of diphtheria cultures. All swabs received up until 1 P. M. are now examined the same evening between 7 and 8 P. M. This often saves an entire day and where a telegram is requested the physician often receives his report within 24 hours of taking the culture. This service will be maintained throughout the diphtheria season, that is as long as there are sufficient cultures to justify the cost.

AUBREY H. STRAUS, Bacteriologist.

Proceedings of Societies

MEDICAL SOCIETY OF VIRGINIA.

Report of Executive Council.

At a meeting of the Executive Council, June 22, 1921, the Secretary-Treasurer was instructed to pay to Richmond Academy of Medicine, the sum of \$50.00, as the Society's contribution toward the prosecution of violators of the Medical Practice Act. He was also instructed to pay to Dr. J. W. Preston the sum of \$150.00, for the same purpose.

The secretary reported 125 delinquent members to the Society and he was instructed, on formal motion made by Dr. Gray, seconded by Dr. Howle, that these delinquents be notified that they would be given an additional thirty days in which to settle their accounts and on their failure to do so should be dropped from membership.

The secretary was instructed to get data on methods of other state organizations in handling legal defense for members of the Medical Society against whom suit is brought for alleged civil malpractice.

The secretary made a report on the use of the small library now in the office of the Medical Society, by members throughout the state. On motion by Dr. Nelson, seconded by Dr. Howle, the executive council recommends that a circulating library, suitable to the needs of the Society, be established.

The program as outlined by the Publication Com-

mittee, was submitted to the executive council and approved. The subject selected for discussion at the Lynchburg meeting was "Systemic Manifestations of Chronic Local Infections."

Respectfully submitted,
Garnett Nelson,
Clerk.

PROCEEDINGS OF THE HOUSE OF DELEGATES.

WEDNESDAY, OCTOBER 19, 1921.

Roll of accredited delegates and members of Executive Council was called and a quorum found present.

The reports of the President, Clerk of the Executive Council, delegates to the American Medical Association, Necrological Committee, and Secretary-Treasurer, read the previous evening, were called for by the President, and they were unanimously accepted and referred to the Executive Council as prescribed in the Constitution and By-Laws. The Secretary-Treasurer was instructed to withhold from publication the financial report until the close of the year 1921.

A plan was presented looking to the establishment of a Circulating Library, suitable to the needs of the Society, and unanimously approved. The President was instructed to appoint a committee to devise ways and means for putting this plan into execution. The President appointed the following as members of this committee: Drs. Stuart McGuire, Richmond; Southgate Leigh, Norfolk; I. C. Harrison, Danville; Isaac Peirce, Tazewell; R. J. Payne, Fredericksburg.

The President made a statement concerning the work of the American Society for the Control of Cancer. A motion was passed that the matter of co-operation of the Medical Society of Virginia with this organization be referred to the Executive Council.

The Secretary-Treasurer was instructed to co-operate with field workers of the American Medical Association in securing members to the two organizations, with the understanding that the work was to be prosecuted only so long as the results justified it and only with the co-operation of the local societies.

The following resolution was introduced:

Whereas, The Commission on Medical Education in Virginia, appointed by the Governor to study medical education in Virginia and make a report to the legislature, has recommended that there be one state supported school in Virginia, and

Whereas, The Commission has recommended that the departments of medicine, dentistry, and pharmacy be conducted by said medical school as a part of the University of Virginia, and

Whereas, The Commission has recommended that said school be conducted in Richmond, and

Whereas, The State Dental Association unanimously, and the State Pharmaceutical Association unanimously, with two exceptions, have endorsed this report, and

Whereas, The medical profession of the state has, by an overwhelming majority, indicated its appreciation of the urgent necessity for adopting this report; therefore, be it

Resolved, 1. That the Medical Society of Virginia, in its annual session at Lynchburg, endorses this report and urges the state legislature and the Governor, to enact the necessary laws to put it into effect at the earliest possible date, and, be it

Resolved, 2. That the editor and publication

committee of the Virginia Medical Monthly be instructed to use its columns in support of the Commission's report.

After considerable debate, the vote was called for on this resolution, with the following result: Ayes, 24; noes, 12. The Secretary was instructed to report the vote by which this resolution was passed, making his report to the Medical Society of Virginia at the general meeting, Thursday afternoon.

The House of Delegates approved the optional plan of medical defense for members of the Society, who may be sued for alleged civil malpractice, the cost to the members not to exceed \$1 per annum.

The House of Delegates approved the suggestion of the Secretary-Treasurer that he be supplied with a Ford automobile for the state organization work. There being no further business, the meeting adjourned until Thursday, at 9 A. M.

THURSDAY, OCTOBER 20, 1921.

The President being called away, Dr. J. C. Flippin was unanimously elected chairman of the meeting.

Dr. Nelson read the report of the Executive Council.

Dr. S. W. Maphis, of Warrenton, was nominated for membership on the State Board of Medical Examiners and his nomination was unanimously approved.

The motion was made and unanimously adopted that the President appoint a committee of five on Child Hygiene. He appointed the following committee to co-operate with the State Department of Health: Dr. McGuire Newton, Richmond, chairman, and Drs. Mary E. Brydon, of the State Department of Health; L. T. Royster, Norfolk; John Staige Davis, University; G. A. Stover, South Boston.

Motion was made and passed unanimously that the President appoint a committee of seven to co-operate with a similar committee from the State Nurses' Association, to work out a training course for nurses, adjusted to meet the present acute shortage of nurses. The President appointed the following committee: Drs. J. Allison Hodges, Richmond, Chairman; A. M. Willis and R. C. Fravel, Richmond; Joseph T. Buxton, Newport News; C. J. Andrews, Norfolk; Mosby Perrow, Lynchburg, and J. C. Flippin, University. The following alternates were appointed: Drs. Charles R. Robins, C. C. Coleman and W. T. Oppenheimer, of Richmond; J. S. Davis, University; L. G. Richards, Roanoke; W. F. Drewry, Petersburg.

Invitations were received from Roanoke and from Norfolk for the Society to meet in those cities next year. The invitation of the Norfolk County Society was accepted unanimously.

Dr. W. W. Wilkinson, La Crosse, was nominated a member of the Executive Council from the State-at-Large. The following nominations for membership on the Executive Council, to fill vacancies caused by expiration of term of office, were reported by the Secretary-Treasurer: Second District, Dr. J. J. Miller, Norfolk; Fourth District, Dr. Thos. G. Hardy, Farmville; Sixth District, Dr. H. B. Spencer, Lynchburg; Ninth District, Dr. Francis H. Smith, Abingdon.

The report of the Executive Council, containing the following recommendations, was unanimously adopted:

Dr. E. L. Kendig, the chairman of the Council

having resigned, Dr. Isaac Peirce, of Tazewell, was elected chairman, with Dr. Garnett Nelson, as clerk.

That Dr. Paul W. Howle and Dr. Garnett Nelson be authorized to employ an auditor to audit the statement of the Secretary-Treasurer as soon as possible after the end of this fiscal year and report to the first meeting of the Executive Council thereafter, that they shall comply with Section 3, Article IV. of the Constitution and By-Laws.

That all reports made at the opening meeting be received and filed.

The Council nominated the following officers:

For president, Dr. E. C. S. Taliaferro, Norfolk.

For first vice-president, Dr. John Staige Davis, University.

For second vice-president, Dr. Clarence Porter Jones, Newport News.

For third vice-president, Dr. J. Beverly DeShazo, Ridgeway.

For secretary-Treasurer, Mr. G. H. Winfrey, Richmond.

All committees continued as before.

That the salary of the Secretary-Treasurer and Business Manager be made \$3,000 a year, and that the salary of the editorial and business assistant be made \$2,000 a year.

These reports were read to the Society as a whole on Thursday afternoon.

A motion was made and passed that the proceedings of the House of Delegates and recommendations of the Executive Council be unanimously approved, except that resolution endorsing the report of the Commission on Medical Education in Virginia. This resolution, endorsing the above mentioned report was called up for consideration. After considerable argument against this resolution, a substitute resolution was introduced, advocating that the Medical Society of Virginia "refrain from any present expression of opinion as a body upon the question of location of the single state-supported medical school."

On request of several proponents of this substitute resolution, a recorded vote was made with the following result: Ayes, 97; noes, 174. The substitute resolution was, therefore, declared lost.

The original resolution, calling for the approval of the body as a whole of the report of the House of Delegates, endorsing the findings of the Commission on Medical Education in Virginia, was now called up and received the approval of the majority of those present.

FRIDAY, OCTOBER 21, 1921.

In meeting of the Society, as a whole, it was moved and passed that the rules be suspended and that the report from the Membership Committee be presented. The chairman of the Membership Committee presented nineteen applications for membership, all of whom were unanimously elected.

The Secretary-Treasurer was instructed, by a unanimous vote, to express the thanks of the Society to the members of the Lynchburg and Campbell County Medical Society, and through them to the people of Lynchburg, for their generous hospitality during the period of the meeting.

G. H. WINFREY,
Secretary-Treasurer.

Southwestern Virginia Medical Society.

The semi-annual meeting of this Society in Marion, September 21 and 22, under the presi-

dency of Dr. W. R. Rogers, of Bristol, was one of the largest and best meetings in its history. Twenty-five new members were received into the Society. Drs. W. R. Rogers, Bristol, and R. H. Woolling, Pulaski, were elected delegates to the Lynchburg meeting and Drs. F. H. Smith, Abingdon, and J. C. King, Radford, alternates.

Pulaski was selected as the next place of meeting, May 11 and 12, 1922, and the following officers were elected: President, Dr. A. B. Greiner, Rural Retreat; vice-president, Dr. T. K. McKee, Saltville, and secretary-treasurer, Dr. E. G. Gill, Roanoke (re-elected).

The Association of Surgeons of the Chesapeake & Ohio Railway

Held their annual meeting in Richmond, October 28, Dr. E. H. Griswold, of Peru, Ind., presiding. There were about a hundred members in attendance and an interesting scientific program was presented. Officers elected at this meeting are: President, Dr. James M. Salmon, Ashland, Ky.; vice-presidents, Drs. S. W. Hobson, Newport News; A. Murat Willis, Richmond, and Walter R. Griess, Cincinnati; secretary-treasurer, Mr. G. E. Meanley, Richmond (re-elected). The executive committee consists of Drs. S. G. Smelser, Richmond, Ind.; W. E. Vest, Huntington, W. Va.; Horace L. Goodman, McKendree, W. Va.; Leslie L. Bigelow, Columbus, O.; Fred W. Tyree, Hitchkins, Ky.; and Geo. J. Tompkins, Lynchburg, Va. The date and place of the next meeting will be determined later by the executive committee.

Miscellaneous

A Soft (Poetic) Answer Turneth Away Wrath.

A certain elderly gentleman consulted an X-ray specialist in regard to a sore spot on his neck. He was given treatment, and, inasmuch as it was with some difficulty, real or imagined, that he could come to town regularly for additional treatments, the specialist did not insist that he come at regular intervals, but requested the patient to return at such times as best suited his convenience, he being a man well past the eighth decade of life. This the patient did, but the intervals being rather irregular the results were not all that had been hoped for. In due course of time he asked

for his bill, and a statement of account was sent him. By return mail came the following letter:

April 11, 1921.

MY DEAR DOCTOR:

I hate like the devil to send you the enclosed check for \$25, because it represents *waste*, which I abhor—something for nothing, the sore spot coming back regularly after each treatment, and on hand now.

In view of the fact that your old blow-gun accomplished nothing, I feel that your sense of justice will cause you to hand over the enclosed to the Red Cross, or the Public Health fund, or better still the Hoover Anti-Starving Fund.

Yours truly,

To this letter reply was made as follows:

Your answer to my modest bill
Is verily a bitter pill;
And tho' you retched a bit at mine,
I'll swallow yours without a whine.
The little check you'll never miss,
And you're a lucky man in this,
That were the sore not on your neck
You would have lost a bigger check.
The old blow-gun you count as nought,
Yet it has many battles fought
Against disease of every kind,
In bone and muscle, blood and mind;
And tho' to sneer at it you're prone,
Against them all it holds its own.
The little check you mourn as lost
May save some one from cold and frost.
The missile, too, that bears your name,
I'll treasure up and neatly frame,
As testimony strong, by Heck,
That tho' you've "got it in the neck,"
No one can there a symptom find
That aught is wrong within your mind.

G. M. M.

The effect of this is plainly mirrored in the old gentleman's answer:

April 19, 1921.

MY DEAR DOCTOR:

I am now tickled to death that I wrote you that impudent letter last week, because without it I never would have had your delightful reply. The members of my family are as much pleased as myself. I read it over every morning as a fitting preparation for my day's work, and, while I have no facilities for framing it, it will surely go into my letter file marked "Letters worth keeping." More than this I will seriously strive to develop sore spots on convenient portions of my anatomy to help keep your "blow-gun" in practice, regardless of the possibility that checks sent for future ser-

vices may come back to you marked "No Funds."

Sincerely yours,

The Truth About Medicine

During September the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

The Abbott Laboratories:

Procaine-Adrenalin Hypodermic Tablets No. 2.

Dry Milk Co.:

Protolac.

Hynson, Westcott and Dunning:

Tablets of Benzyl Succinate—H. W. and D.

Intra Products Co.:

Ampules Ven Sterile Solution Mercury Oxy-
cyanide 0.008 Gm.

Ampules Ven Sterile Solution Mercury Oxy-
cyanide 0.016 Gm.

Lederle Antitoxin Laboratories:

Acne Combined Vaccine.

Mead Johnson and Co.:

Casec.

N. Y. Intravenous Laboratory:

Loeser's Intravenous Solution of Mercury Oxy-
cyanide.

Seydel Mfg. Co.:

Benzyl Succinate-Seydel

Nonproprietary Articles:

Benzyl Succinate.

Calcium Caseinate.

Book Announcements

Neoplastic Diseases. A Text-book on Tumors. By JAMES EWING, M. D., Sc. D., Professor of Pathology at Cornell University Medical College, New York City. Octavo of 1,027 pages with 479 illustrations. Philadelphia and London: W. B. Saunders Company, 1919.

Neoplastic Diseases by Ewing is a comprehensive work of over 1,000 pages devoted exclusively to the history, theories, and pathology of tumors. It has evidently been the object of the author to make clear the origin and structure of tumors. Under improved nomenclature all tumors are discussed from the commonest varieties to those rare forms that are known only by the names of the authors who described them. Chief in importance is the discussion of cancer, the great purpose of the book being evidently to endeavor to do something that might benefit in eliminating this scourge. Cancer was well known to the ancients, and Hippocrates treated it by burning, a method we have seen revived in recent years. The theories of the nature of cancer are rather fully discussed, together with metastases, and

the effects of malignancy on the organism.

The description of both macroscopic and microscopic pathology are clear and concise, and a subject that is usually considered dry is made interesting reading. The subject is covered most satisfactorily. G.

Creative Chemistry. Descriptive of Recent Achievements in the Chemical Industries. By EDWIN E. SLOSSON, M. S., Ph. D., Literary Editor of the Independent, Associate in Columbia School of Journalism. Author of various books. 311 pages with many illustrations. New York. The Century Company. 1921. 8vo. Cloth.

A Treatise on Cataract. By DONALD T. ATKINSON, M. D., San Antonio, Texas, Fellow of the American Academy of Ophthalmology and Otolaryngology, etc. 8 vo. 150 pages, with original illustrations. New York. The Vail-Ballou Company, publishers.

The A. R. C. "Child Health Exposition",

Which toured the larger cities of devastated France beginning May, closed its season early in October at Valenciennes. During the five months, it was "shown" for periods of two to three weeks in six French cities, Lille, Roubaix, Tourcoing, Cambrai, Douai and Valenciennes, besides a month in Paris. The attendance at the Exposition averaged about 5,000 persons daily.

Every feature in the rearing of children according to the soundest and most approved methods was shown in the exhibition. Several French and American organizations joined with the American Red Cross in providing the various specialized departments. The American Committee for devastated France, the Bordeaux Training School for Nurses, the French Red Cross, and the Jardin des Enfants, were among the co-operating organizations. The exposition received the enthusiastic and unanimous support of the French medical profession in every city. Every local physician gave his services without charge, and most of them were occupied for nearly half their entire day, throughout the period of the exposition, in the arduous work of lectures, examinations, consultations, measurements and the judging of babies. Ample quarters for the exposition were furnished in each case by the municipal authorities,—usually in a public school building or municipal exhibition hall. Each morning hundreds of school children were taken through the exposition by their teachers.

It is expected that the exposition will be

continued next summer under the exclusive management of the French child-health organizations.

Tests of Pine Product Disinfectants.

The Bureau of Chemistry and the Insecticide and Fungicide Board, as the result of a bacteriological and chemical study of pine product disinfectants, found that these products, while effective against *B. typhosus*, are not effective against *M. aureus* and *B. anthracis*, and should not, therefore, be used for general disinfecting purposes. When using pine-oil emulsions against *B. typhosus* it is safer for practical purposes, according to the report, to employ a solution 5 times the strength capable of killing the organism in 5 minutes. Thus, a product showing by the Hygienic Laboratory method a killing power of 1-500 should be used in a 1-100, or 1 per cent dilution. If the product will not give a dilution of such a concentration and remain completely emulsified, it should not be used as a disinfectant.

Copies of Bulletin No. 989, giving data upon which conclusions are based, may be had upon application to the Division of Publications, Department of Agriculture, Washington, D. C.

Suicide and Homicide by Race.

Eugenical News, in commenting on the suicide and homicide rate throughout the country, calls attention to the fact that suicide is a very minor cause of death in America among colored persons but, with this same class, the homicide rate is many times greater than for whites.

Hawaii to Have V. D. Clinic.

The legislature of Hawaii has appropriated \$15,000 from the general revenues of the territory for the biennial period beginning July 1, 1921, for the establishment and maintenance of a venereal disease clinic in Honolulu. This is the first venereal disease clinic to be established on the island and will be free to all residents of Hawaii.

Virginia Medical Monthly

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PUBLISHED BY THE PUBLISHING COMMITTEE.

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Editorial

Resolution by Medical Society of Virginia Endorsing the Majority Report of the Commission on Medical Education in Virginia.

Whereas, The Commission on Medical Education in Virginia, appointed by the Governor to study medical education in Virginia and make a report to the legislature, has recommended that there be one state supported school in Virginia, and

Whereas, The Commission has recommended that the departments of medicine, dentistry, and pharmacy be conducted by said medical school as a part of the University of Virginia, and

Whereas, The Commission has recommended that said school be conducted in Richmond, and

Whereas, The State Dental Association unanimously, and the State Pharmaceutical Association unanimously, with two exceptions, have endorsed this report, and

Whereas, The medical profession of the state has, by an overwhelming majority, indicated its appreciation of the urgent necessity for adopting this report, therefore be it

Resolved, 1. That the Medical Society of Virginia, in its annual session at Lynchburg, endorses this report and urges the state legislature and the Governor to enact the necessary laws to put it into effect at the earliest possible date, and be it

Resolved, 2. That the editor and publication committee of the Virginia Medical Monthly be instructed to use its columns in support of the Commission's report.

To the Medical Society of Virginia.

At last you have spoken: spoken in definite terms of your approval of the establishment of

the Medical Department of the University of Virginia in Richmond. You have spoken after deliberate and careful study. For months upon months you have thought of and discussed this question. And recently in your state convention you adopted resolutions urging upon the legislature your opinion.

Now, yours is an expert opinion which should be heeded. While as respected citizens of this commonwealth any action taken by you, as a state organization, should receive the most careful attention of the law makers, on the matter of medical education your opinion should be determining in its effect on the legislature. You must remember, however, that the layman-legislator does not always see medical questions from your point of view. So, in addition to expressing your expert opinion as to what you think should be done in this matter, you must exert yourselves in every proper way to have your representatives in the law-making body put into effect the recommendation of the Medical Commission. This necessity will demand great activity on the part of every doctor in the state organization favoring this change. Surely, this state organization of doctors will, after deliberately taking action on this matter, do all it can to put in force its will.

To Our Law Makers.

The doctors of Virginia, at the last state convention, adopted resolutions urging you to place the Medical Department of the University of Virginia in Richmond. The resolutions supported and urged the legislature to put into execution the report of the Commission on Medical Education. This Commission was created by the last legislature for the purpose of making a survey of the needs of Virginia. The trend of opinion on the matter of medical education in this State is clear in the lamentable fact that the resources and agencies now utilized in the teaching of medicine are inefficient. It is clear to informed observers that Virginia is failing to utilize its available resources to the best advantage in this field. It is felt that the operation of two medical schools, both handicapped by adverse conditions, is poor service to our sick population. Especially so, when the transfer of a department of the established university to a larger center of population will, at once, remove this

great hindrance and be a big step toward the formation of a great medical school.

You are urged to support the Medical Commission. This Commission has thoroughly canvassed our needs in this matter. The Commission's report, if adopted and put in force, cannot fail to bring a new era to our old State in medical education. The absorption of the Medical College of Virginia and the establishment of the medical school in Richmond where the faculty of the University, under the control and direction of its Board of Trustees and its President, may conduct a modern medical school, will be an epochal step for Virginia. No longer, when this becomes a reality, will it be heard that Virginia is a "back number" in medical education. Virginia will then have made possible the utilization of the resources easily within her grasp. She will then have taken her splendidly trained teachers at her University in Charlottesville, handicapped by limited clinics, and sent them to her largest city, where adequate clinical teaching may be conducted with reasonable cost and outlay. The University can not fail to be greatly strengthened by such a move. The University, strong and full of vigor in much of its educational work in the State, will by this move become a greater factor in the upbuilding of the State.

Some have expressed a fear that this would be the beginning of a movement to take other departments away from the University at Charlottesville. This fear is not based upon well founded reasons. The modern medical student must either study and carefully examine diseases while in student-life, under the direction of teachers, or he must go out from his school to make such observations upon the public after he has received his degree. In other words the more sick people the medical student examines and studies while a student, under the guidance of teachers and hospital control, less will be errors in diagnosis and blunders in treatment in the early years of practice. Why should a medical student be graduated and be given a license to practice obstetrics, for instance, until he has personally studied and attended a large number of obstetrical cases? Have not the future mothers and babies of this State the right to demand that the young doctors shall be experienced in the practical side of this branch of medicine?

In Richmond that branch can be taught by practical demonstration in a large number of cases because of the great clinical material available. What is true of obstetrics is true of the other branches.

Let's educate our young men and women in medicine in the State in a modern way. By doing what your Commission on Medical Education recommends, you will do a big thing for medical education, a big thing for your University, and a big thing for your State.

Our New President.

Dr. Edward Carrington Stanard Taliaferro, the newly elected President of the Medical Society of Virginia, was born in Gloucester County, Va., on December 17, 1874. He is the youngest son of General William Booth Talia-



Dr. E. C. Taliaferro.

ferro and, as such, is a scion of one of the prominent families of the old regime in Virginia.

He was brought up in Gloucester County, where he attended the public schools, and received his further academic education at William and Mary College. After that he went to the Medical College of Virginia, where he graduated as Doctor of Medicine in 1898. Af-

ter leaving school he served as interne at St. Vincent's Hospital, Norfolk, and then returned to Gloucester County where he practiced medicine two years. As the opportunities for advancement were not sufficiently great for him in the country, he went to Europe in 1902, and spent over a year studying in the clinics and laboratories of Vienna. After returning to this country he started to practice medicine in Norfolk, where he has continued to work up to the present time.

Dr. Taliferro, while doing a general practice, leans especially to the surgical side of the profession, and his work has been sufficiently good for him to have been elected a Fellow of the American College of Surgeons. His education, however, is not one-sided, as he did a good deal of laboratory work in Europe, and was City Bacteriologist in Norfolk for a number of years.

He has at the present time a large practice both from the town, and from people who come to him for surgical treatment from the surrounding country. He is a large man both in spirit and stature, standing 6 feet 5 inch, in his stockings, and having a genial disposition which so frequently goes with large men.

In 1908 he married Miss Alice Serpell, of Norfolk, and has three children.

News Notes

Pleasant Memory.

Elsewhere in this issue will be found the secretary's report of the business proceedings of the Lynchburg meeting of the Medical Society of Virginia. This would not be complete without an expression of appreciation for the splendid way in which the local doctors and their friends among the laymen looked out for the comfort and pleasure of those who attended. An unusually large number of ladies accompanied the doctors and pleasant entertainment was provided for them throughout the time of meeting.

The scientific exhibits were exceedingly interesting and the large number of commercial exhibits added greatly to the attractiveness of the occasion. The attendance was excellent, there being nearly four hundred members who registered for some or all of the sessions. It was a matter of regret that we did

not receive quite the desired number of certificates to enable the members to secure reduced rates from the railroads. But for the fortunate many who travelled on passes, this might have been possible; however, we of the less favored class are "not as those without hope"—of a pass.

Next year we meet in Norfolk. Begin now to think of being there. That is another of the places whose name is synonymous with a good time.

The Seaboard Medical Association

Of Virginia and North Carolina will hold its twenty-sixth annual meeting in Norfolk, Va., December 6, 7, and 8, 1921, under the presidency of Dr. E. C. S. Taliaferro of Norfolk. Dr. Wm. L. Harris is chairman of the Norfolk Committee of Arrangements. In addition to a number of attractive entertainments, an interesting scientific program has been arranged and a good attendance is expected. On December 6, the Norfolk County Medical Society will give a smoker in its quarters; the president, Dr. E. C. S. Taliaferro will give a banquet on Wednesday night and there will be an oyster roast at Virginia Beach on Thursday midday.

The secretary, Dr. Clarence Porter Jones, Newport News, Va., will be glad to furnish any further information about this meeting.

Beer Now to be had on Doctor's Prescription.

The Bureau of Internal Revenue has issued regulations which will permit the manufacture of beer and allow it to be described by doctors. The amount which may be prescribed at one time is fixed at two and one-half gallons. However, no regulations are issued as to the frequency with which the prescriptions may be given or is it specified the amount of alcohol that the beer may contain. The regulations also permit doctors who have permits to prescribe not more than 2 quarts of wine, without stipulating how often wine may be prescribed. The use of spirituous liquors, whiskies, brandies, etc., is limited to a pint in ten days.

Each physician who has the permit to prescribe liquor should fully inform himself as to limitations by communicating with the Commissioner of Internal Revenue in his district. More than ever before this new law places upon doctors the responsibility to serve their fellowmen by giving or withholding pre-

scriptions as they conscientiously think. The self-respecting physician will not yield to the temptation which may mean the ruin of another.

Fight Against Cancer.

Under the auspices of the Virginia committee appointed by the American Society for the Control of Cancer, mass meetings were held at places throughout the State during Cancer Week, October 30 to November 5. In the various cities, specialists of note spoke and, if laymen are as ready to make use of the facts stated as they were to hear the speakers, much good should result from these timely warnings.

From the rural districts we have received only one report, but this shows that good work was done in at least one county of the State—Floyd. At meetings there, during Cancer Week, Drs. R. T. Akers and J. W. Thurman spoke on the "*History of Cancer*"; Drs. J. M. Harman and J. L. Harvey on its *Cause*, Drs. J. C. Rutrough and C. K. Burnett on *Surgical Treatment*, and Dr. M. L. Dalton on *Medical Treatment*.

Sex Ratio of U. S. Population.

The U. S. Bureau of Census in a recent statement shows that since the earliest census there has been a preponderance of males over females in this country. The total population of the United States in 1920 was 105,710,620—53,900,376 males and 51,810,244 females, or a ratio of 104 males to 100 females. The ratios more nearly approach each other in the eastern and southeastern states and show a wider divergence in the western states.

There was a preponderance of males over females in 1920 in every state except Massachusetts, Rhode Island, New York, North and South Carolina, Georgia and Alabama, in which the ratio for males to females varied from 96.3 to 99.9 per 100 females. The District of Columbia shows a far greater excess of females, the ratio there being 87 males to 100 females.

Diphtheria Year.

Cases of diphtheria reported to health officers during the first eight months of 1921 show a decided increase over previous years. This is more especially in the North Central States, but there likewise seems an increased incidence of the disease in our own State this year.

In a recent issue of *Public Health Reports* appears a piece entitled "Diphtheria Immuni-

zation" which stresses diphtheria prevention after the use of the Schick test by the injection of diphtheria toxin-antitoxin. Active immunization of young children against diphtheria is useful in institutions and in localities where prompt diagnosis and treatment of diphtheria is not assured. The most favorable age for active immunization is stated to be from six months to six years.

This plan of immunization is being tried out in some of the larger cities and is worthy of investigation.

Former U. C. M. Men Visit Richmond.

Drs. J. B. Winfield and R. L. Osborn, of Clarksburg, W. Va., both of whom attended the former University College of Medicine, in Richmond, were visitors in this city, last month. They were taking a motor trip through Virginia, Maryland and West Virginia.

Dr. Osborn, who was recently made full time health officer of Clarksburg, spent the week in this city with the Richmond Health Officer.

Dr. R. S. Spilman,

Formerly of Norfolk, Va., has accepted the position as Post Surgeon and Professor of Biology at the Virginia Military Institute and has entered upon his duties there.

Dr. H. R. Fairfax

Was recently appointed health officer of Bristol, Va.

Dr. H. T. Hawkins,

Who has recently been located at Kenbridge, Va., has moved to Clover, Va.

Dr. Ernest Mosby

Has returned to his former home in Waynesboro, Va., after spending some time in Montgomery, Ala.

Dr. George H. Sparks,

Who has been making his home at Mitchells, Va., is now located at Brandy Station, Va.

Will You Help in the "Near East Relief"?

From those who have been engaged in relief work in the "Near East" come stories of unspeakable atrocities and suffering endured by the people of Armenia and Syria. Officials estimate that there are approximately a hundred thousand orphans in addition to a large number of adults, in the famine area for whom immediate responsibility should be assumed. These two Christian countries who stood by the allies in the World War have been rav-

aged by the Turks many times and yet have remained true to "the colors." Shall we not "keep faith" with them?

The work of the Near East Relief is non-sectarian. For every \$5 you give, one child will be kept alive, well fed, well clothed and as happy as he or she can be under the circumstances, for a whole month. Contributions from residents of this State may be sent to Oliver J. Sands, chairman of Virginia Division, Near East Relief, at American National Bank, Richmond, Va.

Dr. B. Ryland Hudnall,

Formerly of Low Moor, Va., is now located in Covington, Va.

Married—

Dr. Oliver Allison Ryder, Alexandria, Va., and Miss Anne Elizabeth Potts, Portsmouth, Va., October 8.

Dr. Madison Redd Drewry and Miss Mary Anderson Starling, of Cascade, Va., October 12.

Dr. Howard Russell Masters, Richmond, and Miss Bealmere Dare Linthicum, Fredericksburg, October 26.

Dr. Oliver Curry Brunk, Richmond, and Miss Bernice Hall, Lynchburg, Va., October 25.

Dr. Irl Cephas Riffin and Miss Ruth Elizabeth Bradshaw, both of Windsor, Va., October 5. Dr. Riffin is a member of the class of '17, Johns Hopkins University Medical School, and has recently located at Windsor, Va.

Dr. William Walton Rixey, formerly of the University of Virginia, and Miss Helen Bradish, of "Locust Grange", near Charlottesville, Va., in New York City, in October. Dr. Rixey was a member of the '18 class of the Medical Department of the University of Virginia and later served an internship at Johnston-Willis Sanatorium, this city. Dr. and Mrs. Rixey will make their home in Princeton, W. Va.

The State Board of Medical Examiners of Virginia

Will hold its next meeting in Richmond, December 13-16, 1921. All applications should be complete and in the hands of the Secretary, Dr. J. W. Preston, Roanoke, Va., at least ten days prior to this time.

Dr. Preston Parks,

Parksley, Va., has left for New York to

take a course of some length at the New York Postgraduate School and Hospital.

Lt. Toson O. Summers, U. S. N.,

Now located in this city, has returned from a pleasant visit to New Canaan, Conn.

Dr. M. L. Dalton

Was made president of the Parent Teachers' Association of Floyd, Va., at a meeting held in that place October 7.

Dr. and Mrs. Geo. A. Stover,

Of South Boston, Va., have returned home after a visit to Columbus, Ga., where they attended a convention.

Dr. J. C. Bodow

Has returned to his home in Hopewell, Va., after being under treatment at a Richmond hospital.

Watts Hospital,

West Durham, N. C., was a beneficiary to the amount of \$200,000 under the will of the late George W. Watts, of that place.

Principal Causes of Death.

The Department of Commerce announces that the Census Bureau's annual report on mortality statistics, which will be issued shortly, shows 1,142,578 deaths as having occurred in 1920 within the death registration area of continental United States, representing a death rate of 13.1 per 1,000 population as compared with 12.9 in 1919, which was the lowest rate recorded in any year since the registration area was established in 1900.

The death registration area (exclusive of the Territory of Hawaii) in 1920 comprised 34 states, the District of Columbia and 16 registration cities in non-registration states, with a total estimated population on July 1st. of 87,486,713, or 82.2 per cent. of the estimated population of the United States. At present the only states not in the area are Alabama, Arizona, Arkansas, Georgia, Idaho, Iowa, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, West Virginia, and Wyoming.

Organic diseases of the heart and pneumonia were the diseases contributing most largely to the mortality rate and for both there was a higher rate than in 1919. The fatalities caused by automobile accidents and injuries show an increase from 9.4 per 100,000 in 1919 to 10.4 in 1920. A marked decrease is shown in the death rate from tuberculosis,

which was 114.2 in 1920 as compared with 125.6 in 1919. The death rate from suicide declined from 11.4 in 1919 to 10.2 in 1920. There was a decline also in the rate for typhoid fever and in that for accidental drowning.

Virginia Adopts Railway Code

Chief surgeons of seven leading railways, forming a committee on sanitation, have formulated a code which was accepted by the American railway association and has already been adopted by ten states, including Virginia. The new code is a considerable advance over any previously in force either in this State or, so far as is known, anywhere else. Provisions governing the transportation of sick persons are unusually complete, and certain types are barred from trains.

Water and ice supplies are carefully safeguarded; provisions for the cleaning and disinfecting of cars are ample; the code assures proper ventilation and the care of toilets or lavatories; dining cars will have to be screened and employees of dining cars will have to be careful about personal cleanliness; refrigerators, tableware, food containers, kitchen utensils have to be kept absolutely clean—in fact, it would seem that nothing has been overlooked in the effort to assure absolute sanitation.

Equally stringent are the rules governing the building, maintenance and equipment of railway stations, particularly those that have restaurants. Even construction camps come in for their share of attention, and when camps are abandoned all rubbish must be destroyed.

Copies of the code may be obtained from the State Board of Health, 1110 Capitol Street, Richmond.

Dr. Henry G. Turner,

Of Raleigh, N. C., has moved to Petersburg, Va., to make his home. He is a graduate of the University of Pennsylvania, Medical School, in the class of '06, and served as captain in the medical corps of the army in the World War.

Dr. William J. Mayo,

Rochester, Minn., who was one of the invited guests at the Lynchburg meeting of the Medical Society of Virginia, after a sight-seeing trip in the country near Lynchburg, stopped over in Richmond and held a clinic, before returning to his home.

Dr. J. N. Barney,

Fredericksburg, Va., was appointed a mem-

ber of the local committee to arrange for Armistice day celebration in that place.

Dr. and Mrs. A. W. Rusimissele,

Of Waterford, Va., in the early fall enjoyed an extended visit to friends in the Valley of Virginia.

Dr. R. W. Selby,

Formerly of Burgess Store, Va., announces his removal to Raccoon Ford, Va.

Dr. Junius F. Lynch,

Of Norfolk, Virginia department commander of the American Legion, was one of the speakers at Windsor, Va., on Armistice day, at the celebration given under the auspices of the legion post of that community.

Medical Men Organize.

Physician and surgeon members of the University Club of Washington, D. C., recently organized a society which will hold luncheons and have short programs at stated intervals. Dr. Noble P. Barnes was elected president, Dr. George Tully Vaughan, vice-president, and Dr. Everett M. Ellison, secretary-treasurer.

New Hospital for Children.

As a memorial to James Whitcomb Riley, a children's hospital is to be built in Indianapolis on a site which has been contributed by citizens of that place. Funds for building the hospital were collected by the school children of Indiana during October and legislature will make an annual appropriation for expenses.

Doctors Officers in Military Order.

At the meeting of the Richmond Chapter, Military Order of the World War, held early in October, Col. J. Fulmer Bright was elected commander, Maj. G. A. Ezekiel, adjutant, and Col. Garnett Nelson, historian. All of these are practising physicians in Richmond.

Dr. V. W. Quillen,

Of Nickelsville, Va., who has been taking a post-graduate course at the Lying-in Hospital, New York City, will return to his home the first of December.

Dr. F. J. Wright

Has returned to his home in Petersburg, Va., after a post-graduate course at the New York Post-Graduate School and Hospital.

Dr. O. L. Watkins,

Of Rustburg, Va., recently enjoyed a fishing trip with some friends at Cape Charles, Va., having taken the trip by automobile. On their

return they stopped for a visit at Old Point and Richmond.

Dr. Alvah Ramsey,

Of Norfolk, Va., was a recent visitor at the home of friends in Burkeville, Va.

Dr. and Mrs. Percy Harris,

Scottsville, Va., recently visited friends in Amherst, Va.

Dr. John A. Hawkins,

Of Danville, Va., has recovered from the effects of a near-serious accident, when his coupe, which started running away down an incline, turned over on him while he was trying to control it from the running board. He had just left the car to visit a patient when his attention was called to the fact that his car was moving. Jumping on the running board he attempted to pull on the hand brake, but the car in the meantime went into a gulley and turned over. Dr. Hawkins suffered severe abrasions about face and head but was otherwise unhurt.

Dr. and Mrs. E. B. Claybrook,

Of Cumberland, Md., have recently been visiting relatives in this city. Dr. Claybrook has many friends here, having studied medicine at the former University College of Medicine.

Dr. William F. Drewry

Has been appointed chairman of the building committee of the new Petersburg, Va., Country Club.

Dr. F. F. Davis,

Of Sassafras, Va., has been appointed by Governor Davis a member of the board of the Virginia Home and Industrial School for Girls, in Chesterfield County, Va.

Dr. Hunter H. McGuire,

Winchester, Va., has been named one of the directors of the Rotary Club which was organized in that place the middle of October.

T. B. Christmas Seals.

This year marks the fourteenth annual Christmas Seal Sale and each one is asked to help support this sale. Work done by the National Tuberculosis Association has resulted in a saving of over 75,000 lives a year, as compared with the death rate of fifteen years ago, when work was first commenced by the Association. The death rate of nearly 200 to every 100,000 population, when the Christmas Seal

sale was inaugurated, has been reduced to approximately 125 per 100,000.

More than fifty counties of this State have already been organized for the sale of these Seals. A goal of 5 cents per capita of the population of Virginia has been set, and the attainment of this goal would mean \$115,318.05 to fight tuberculosis in Virginia. Accept this opportunity given you to help those more unfortunate than yourself.

The Radiological Society of North America

Will hold its annual meeting in Chicago, December 7-9, under the presidency of Dr. Alden Williams, of Grand Rapids, Mich. Dr. M. J. Sandborn, of Appleton, Wis., is secretary.

Dr. M. Benmosche,

A member of the Medical Society of Virginia, who has for several years made his home in Detroit, Mich., has now located in New York City, with offices at 714 West 179th Street.

Dr. Newman Receives Promotion.

Word has been received here that Dr. Samuel Newman, who was connected with the Danville, Va., Health Department, before being attached to the medical commission of the European joint distribution committee in Poland, has been promoted to the post of administrative officer.

Abbott Laboratories Have New Buildings.

To meet the growing demands of their business, the Abbott Laboratories, of Chicago, have just erected a substantial group of eight concrete buildings in North Chicago, and are now enlarging their research department. Their executive offices will be maintained at the former offices, 4739-4753 Ravenswood Avenue, Chicago.

Another New Hospital.

It is stated that the directors of the Virginia Baptist Hospital, which has been chartered to build a hospital in Lynchburg, Va., from funds to come from the \$75,000,000 campaign, put on by the Southern Baptists two years ago, hope to have funds sufficient to start upon the erection of the first unit of the hospital early in the coming year. The first unit is proposed to cost \$150,000.

Dr. and Mrs. Meade S. Brent

Have returned to their home in Petersburg, Va., after a trip to New York and to relatives in Heathsville, Va. Dr. A. M. Brent, of

Heathsville, accompanied them on their trip north.

New N. C. Hospital.

Drs. James P. Matheson, Clarence Peeler, and Henry Lee Sloan, of Charlotte, N. C., have purchased a site in that city, on which they will have erected a modern hospital for the exclusive treatment of diseases of the eye, ear, nose and throat.

Deaths from Automobile Accidents in 1920.

According to the report issued by the Department of Commerce, through the Bureau of Census, in 1920 there were 9,103 deaths resulting from accidents caused by automobiles and other motor vehicles, excluding motorcycles, in the registration area of the United States. Although the rate per 100,000 people has increased steadily since 1915, the number of automobiles has increased so greatly that the rate per 1,000 automobiles was lower in 1920 than in 1915.

In the 1920 report, it is interesting to note that Virginia has next to the lowest death rate from automobile accidents in states in the registration area reporting for the whole year. and Richmond has next to the lowest death rate from these accidents in cities of over 100,000. Kentucky and Indianapolis took the palm from Virginia and Richmond, respectively.

Surgical Instruments For Sale.

Such instruments as are used by a country practitioner to be sold at bargain price. Apply to "V", care this journal.

A Good Location For A Physician.

House and lot in small town, for rent or sale. Good roads and prosperous neighborhood. For particulars, apply to "V", care this journal.

Obituary Record.

Dr. Henry Hyman Levy.

After an illness of about two years, Dr. Levy, who was for many years one of the most prominent and popular practitioners of this city, died October 19. Had he lived until December 27, he would have been seventy-one years of age. Upon completion of his academic education, he studied medicine at the Medical College of Virginia, this city, from which he graduated in 1871. After two years'

internship at Blockley Hospital, Philadelphia, he returned to this city and took up the practice of his profession and had continued actively at his work until his illness.

Dr. Levy was for a long number of years connected with the faculty of the Medical College of Virginia, later being made emeritus professor of the practice of medicine; he was an ex-president of the Richmond Academy of Medicine and Surgery; and an honorary member of the Medical Society of Virginia. His wife, two children and a sister survive him.

Resolutions on Death of Dr. Edward McGuire.

The Richmond Academy of Medicine and Surgery has heard with deep regret of the death of Dr. Edward McGuire. Inheriting the traditions of a long line of medical ancestors, and gifted by birth with marked personal qualifications for his chosen work, he has left behind him a career of ability, conscientiousness, usefulness and honor. As a practitioner, he kept abreast of the advances in his profession; he was endowed in a high degree with traits which make the practical and successful family physician; and in his wide ministrations he evinced those qualities of mind and heart which endeared him to his patients as a wise counselor and a self-sacrificing and faithful friend. He has ennobled his profession and left us an example to follow. Therefore, be it resolved:

First. That we desire to express a keen sense of our loss in the death of Dr. McGuire.

Second. That we extend to the bereaved family our sympathy.

Third. That a copy of these resolutions be sent the family, entered upon the minutes and published in the Virginia Medical Monthly.

(Signed)

WM. S. GORDON,

VIRGINIUS HARRISON,

JAS. H. SMITH.

Dr. Milton Howard Fussell,

Of Philadelphia, prominent as physician and author and recognized as a man of unusual ability by the profession, died from acute dilatation of the heart, October 15, on a train en route to Williamsport, Pa. He was 66 years of age and a graduate from the Medical Department of the University of Pennsylvania in 1884. Dr. Fussell had served in the House of Delegates of the American Medical Association; he was also second-vice-president of the U. S. Pharmacopeial Convention and a member of its committee on revision.

Dr. John Augustus Sanders,

Of Herndon, W. Va., was instantly killed recently, when an automobile in which he was riding skidded down an embankment at Huntington. He was 32 years of age and a graduate of the Medical College of Virginia, Richmond, in 1917.

Fifty-third Annual Session, Norfolk, Va., October, 1922

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Original Communications

GENERAL CONSIDERATIONS OF SYSTEMIC MANIFESTATIONS OF CHRONIC LOCAL INFECTIONS.*

By F. H. SMITH, M. D., Abingdon, Va.

I shall assume that the title assigned me in this discussion is broad enough to cover anything I think pertinent to it, and indefinite enough to permit the omission of anything deemed irrelevant. The length or brevity of my discussion, therefore, I shall try to measure by the standard prescribed for the young lady's skirt. She was told that her skirt should be short enough to be interesting, long enough to cover the subject. It is necessary to make this reservation, because I find the subject of systemic manifestations of focal infections not so easy as would, at first thought, appear. The perusal of recent literature alone would seem to indicate that the subject is a closed one, well nigh universally accepted. Close observers of contemporary practice, however, discredit this conclusion.

The great body of practitioners seems slow to accept the general principles of focal infection, and some have actually become resentful of any assertion of the practical phases of the matter. Thus, between proponent and opponent, there is a wide, if unexpressed, difference of opinion. To fairly present these two phases of thought and to reach a conclusion I conceive to be my task, and it is by no means an easy one.

The subject is not as new as the recent avalanche of discussion would indicate. There are many references to the relation between systemic ailments and distant foci of infection throughout the literature of the last hundred years at least. Since 1877, when Alfred Mantle wrote on the Etiology of Rheumatism Consid-

ered from a Bacterial Point of View (*Brit. Med. Journ.*, 1877, i), much research work has been done, both in Europe and in this country, upon the relation, first of rheumatism, then of a great many other diseases, to infection about the mouth, etc. This work was given great stimulus by the articles of Poynton and Paine, of England, in 1900, still too recent to require review. But, for any one who has in mind recent literature, the outstanding names in connection with our study are those of Rosenow, Billings and their collaborators. In fact, so commanding is their position that we might say the newer principles of focal infection and its relation to systemic disease almost stand upon the acceptance or fall with the rejection of Rosenow's truly remarkable researches.

As just now stated, I find two distinct points of view of the question. The one might be termed the research, experimental, or laboratory side of it: the principles underlying focal infection. The other approach is from the clinical or practical side. Or, we might term it, the practice of medicine and surgery in the field of focal infection.

In discussing the research or experimental phases, I make no claim to originality, as you who are acquainted with the literature will realize, nor to completeness. Extended bibliographies are appended to many of the articles, and from these I have obtained all of my material. I refer you to the articles of Rosenow, in the *Journal of the American Medical Association*, between 1913 and 1916, and to that of Billings in the *Oxford Medicine*.

Billings defines focal infection as a systemic or local disease due to infectious micro-organisms carried in the blood or lymph stream from a focus of infection. A focus of infection is a localized or circumscribed area of tissue invaded by pathogenic micro-organisms. The definition is not above criticism, but it conveys the meaning as well as any other.

A focus of infection is nearly always in connection or communication with the skin or

*Read as part of Symposium on Systemic Manifestations of Chronic Local Infections at the fifty-second annual meeting of the Medical Society of Virginia, Lynchburg, Va., October 18-21, 1921.

mucous membrane. Usually, it is an abscess which cannot drain well. The mucous recesses about the head furnish in practice the greater number of foci. Most prolific are the recesses between the gums and alveolar processes and the teeth; the faucial and lingual tonsils; the nasopharynx with its accessory sinuses; the middle ear and mastoid cells. Yet our gravest oversights lie in forgetting that the focus may be elsewhere. Probably after the head, the genital organs of the male and female are the most fertile fields of infection: urethritis, prostatitis, seminal vesiculitis, epididymitis, cystitis, pyelitis, salpingitis. There is much to lead us to believe that these genito-urinary infections furnish the most fruitful seed for conditions expressed as backache and sciatica by the patient. Infected thromboses about the rectum, rectal ulceration, etc., are oftener overlooked than thought of in the survey of the patient. Ingrowing toe-nails and infective hang-nails have been apparently innocent sources of grave systemic infection.

Appendicitis and cholecystitis, bronchitis and bronchiectasis, it seems to me, are not usually primary, but secondary, foci—relay stations as it were in chronic illness.

Virulent infection results in acute focal disease with definite localizing symptoms and signs, and always systemic symptoms declare themselves, whether we regard them as evidence of systemic infection or of something else. Less virulent infection may not declare itself by any local symptoms, and systemic manifestations may be at most vague and misleading.

The micro-organism, with a little exaggeration, can be any one of the pathogenic invaders of the human body. Were I asked to mention the clearest illustration I could think of demonstrating the relation between focal infection and systemic disease, I should cite syphilis. The Hunterian chancre is the focus; syphilis of the skin, bone, vascular or other system the systemic manifestation. Tuberculosis is another. Usually, however, we think of the pyogenic organisms, and at the top of the list the several varieties of the streptococcus group. There is abundant evidence to indicate that the favorable environment of any focus has as much influence in altering the characteristics of bacteria as the bacteria have upon the tissues harboring them. Among the interesting revelations of Rosenow's study in

what he terms "the new bacteriology," is his demonstration of transmutation within the group of the streptococcus and the pneumococcus, a change from the one to the other. In pursuit of these studies he found that repeated passage of bacteria through animals increases their virulence. I shall refer to this again. Suffice it to say now that there is reason to believe that bacteria may not only change their form, but may also vary in virulence within the focus from time to time. Under conditions conferring immunity, bacteria become relatively avirulent on the one hand; and under conditions of favorable environment, including varying degrees of anaerobiosis, oxygen tension, etc., they become relatively virulent on the other hand.

From such a focus, through blood and lymph stream, bacteria circulate until their passage is blocked in the capillaries. We catch the conception of metastasis in malignancy; metastatic emboli, now made up of bacteria, occlude the capillaries, or are filtered out by lymph nodes, there to set up a new process. The next event depends in part upon the virulence of the organism. If it be virulent, positive chemotaxis occurs, and, depending upon the specific nature of the invading micro-organism, suppuration or other attendant of acute infection ensues. If, on the other hand, the organism is of weaker virulence, cell proliferation is stimulated, followed by ischemia, tissue necrosis, scar formation and retrograde metabolic changes.

We have long been accustomed to speak of the systemic manifestations of infection as toxemic, because efforts to recover bacteria from blood stream and infected part have proved unavailing, at least in chronic conditions. But when utilizing media which more nearly approximate conditions within the human tissues in which the bacteria naturally grow, bacteria can be recovered and grown from the blood stream, the lymph nodes and shortly after their localization from the fluids or tissues secondarily infected. Later, bacterial growth frequently dies out, only to reappear as a new infection, a new invasion from the primary focus lights up the infection. Then both local conditions and systemic symptoms indicate that an exacerbation has occurred.

We admit that recovery of the organism is not in line with older results, nor is it the ex-

perience of most of us in our own laboratories. Yet the repeated positive results in the hands of Rosenow and others, under conditions which he has laid down,* has more weight than any number of negative results under what he has shown are distinctly adverse conditions. If with the newer technic organisms can be grown from the same tissues which under old cultural conditions remain persistently sterile, we must abandon our old conceptions of toxemia, and realize that even in these chronic conditions we are dealing with true bacteremia.

Furthermore, bacteria of focal infections, especially the streptococcus, seem to be strangely versatile in the range of diseases accredited to them. This variability depends upon conditions in which they are propagated. The virulence of the organism is reduced by continued passage through culture media, and is increased by repeated passage through animals. So diseases of widely different symptomatology may be produced by strains of bacteria of the same or closely related species. Thus, a streptococcus at certain lower grades of virulence has produced endocarditis, arthritis, cholecystitis, ulcer of the stomach, myositis and iritis, respectively; while when virulence was high, hemorrhages, edema of the lungs and broncho-pneumonia have commonly occurred. Some such conditions as these varying the virulence of the micro-organism may explain frightful pandemics of measles, influenza, pneumonia and empyema, the fatality of which we believe to be due to the streptococcus; and at the same time allow us to accept the same organism as the cause of such chronic insidious disease as arthritis deformans.

Perhaps the assertion of greatest present moment, the one which has excited the greatest amount of critical comment, is to the effect that the introduction of freshly grown cultures of streptococcus into animals results in that particular micro-organism acquiring to a certain extent a relative affinity, or tropism, for certain tissues. That is to say, a culture of streptococcus from a human stomach ulcer, when injected into a large number of animals, will cause a relatively large percentage of stomach ulcers in the animals injected, though many other lesions will also be caused. This

strain of streptococcus has acquired an affinity for stomach tissue. The same may be said of streptococcus isolated from arthritis, appendicitis, endocarditis, and other lesions.

The experimental data upon which this selective, or elective, affinity or localization of micro-organisms is based is too long and intricate to bear quotation, as interesting as it may be. I will abstract, however, the results set out in Rosenow's latest article, appearing in the *Archives of Internal Medicine*, for September, 1921, under the caption of Focal Infection and Elective Localization in the Etiology of Myositis. In all but one of twenty-eight cases of myositis, he was able to demonstrate elective localization of bacteria from foci or from excised muscle following intravenous injection into animals. Of the twenty-seven positive cases, the streptococcus was found to have an elective affinity for the muscles in twenty-four cases, the streptococcus and staphylococcus in two cases, and the staphylococcus alone in one case. Or, of 202 animals injected with twenty-eight myositis strains, 161 (80%) developed lesions in muscles, and 67 (33%) developed arthritis.

In outline, I conceive this to be the pathogenesis of systemic infection from a local focus as held by Rosenow, Billings and others. Of course, the special tissue diseased modifies the pathologic picture. At any rate, we are told that endocarditis, myocarditis, nephritis, arthritis in its many forms and varying manifestations from acute rheumatic fever to chronic arthritis deformans, myositis, ovaritis, several nervous diseases of hitherto unknown origin, bronchial asthma, ulcers of the stomach and duodenum, cholecystitis, appendicitis, iritis, chorea, erythema nodosum, thyroiditis with sequential myxedema or exophthalmic goiter, constitute but a partial and ever growing list of conditions dependent upon focal infections. Furthermore, all have been produced more or less typically in animals by injecting bacteria grown from chronic foci found in or on patients suffering from these diseases.

The practical application of any principle in medicine is beset with dangers and difficulties. Clinicians are ever ready to grasp and to use any conception which sheds light on a dark field of practice and promises cure or amelioration of hitherto unsatisfactory diseases. Such an attitude is altogether commendable. Were it not for fads and enthusi-

*For details of technic, see various articles of Rosenow, e. g., *Arch. Int. Med.*, 28:274 (Sept., '21.)

asms in medicine, there would be no progress. "Where there is no vision, the people perish." Yet there are dangers, too. Focal infection has excited as much clamor as any story within the realms of fiction. Our very enthusiasm has threatened our undoing. We have gone wild over the thing. I need not rehearse the sorry story, for each of us is sufficiently conscious of the mistakes he has made along these lines. In each one's practice there are patients who have suffered much at the hands of many physicians, and these sad failures are enough to dull the bright edge of any one's enthusiasm.

So it behooves us to stop and take stock. Whither are we going? What is the worth of this work, its practical value? I speak now of the conscientious, intelligent endeavor to ferret out in the individual case any possible focus of infection that is, or may be, etiologically related to the patient's ailment.

For my part, I am convinced that in essentials the principles upon which the present-day theory of focal infection rests are sound. I am just as sure that the practical application of these principles is not easy and is hedged about by more or less strict limitations. The lethargy of the profession is the natural reaction from failure to recognize these limitations rather than because of inherent faults in the principles involved. The principles involved in gastro-enterostomy, for instance, may be simple and sound enough. But should an untrained surgeon apply these principles faultily and his operation fail, it would be unfair to discredit the principle of gastro-enterostomy because of his failure. The victim of systemic manifestation of focal infection may be easily relieved by the eradication of a demonstrable, accessible focus, or he may not be. Such a focus may be only a decoy, its removal may render the patient no whit better. Therefore, each and every patient, in my opinion, certainly those who have reached adult life, should be the subject of complete diagnostic study. Short of such knowledge we court failure, and are constantly bringing the whole principle, as well as ourselves, into disrepute.

But there are difficulties and limitations connected with the patient himself. Most of these people are ambulatory. They refuse hospital admission. Ignorance and poverty defeat oftentimes the thorough investigation necessary. Just so far can we go, no further.

Another difficulty, an obstacle which the research worker is spared, lies in the fact that the living human body is to only a limited extent the subject of experimentation. It isn't often that we find a patient so complacent as to allow us to excise bits of tissue, lymph nodes, to say nothing of bits of heart muscle, kidney substance, etc., to prove our assumption that the bacteriology of these structures is identical with that of the suspected focus in teeth, tonsils, prostate or what not.

Again, we are thwarted by the fact that we cannot keep patients under observation for relatively long periods to determine whether eradication of this or that suspected focus has cleared up his disease. The best we can do in reviewing our work is to list the coincidence of the several foci of infection with the several diseases attributable to such infections; note those removed and those that remain; check results so far as we can ascertain them; and largely by a process of elimination arrive at the conclusion which was, or is responsible.

Yet with all of these limitations—and there are many more—there is much that we can do, if we will. In all of these cases a critically recorded history gives us a bird's-eye view of the situation without which progress is haphazard. Too much of our history-taking is routine. A history worth while cannot be taken on a form by an office nurse. The history must be made by the man who has ultimately the responsibility of the diagnosis. I emphasize this point because I see its daily application to the subject in hand. Unless I can trace through the history the scarlet thread of infection that leads from the primary focus to present disease, I cannot feel confident of any specialist's report to follow.

Then comes the examination. Group medicine, in my opinion, is justified by its results in this very connection as in no other field of endeavor. No man is big enough to properly evaluate all the factors which may be concerned in any case of systemic infection from more or less cryptic foci. And yet a group of conscientious experts in their several lines should be able to examine all accessible and probable foci, and at the end to reach a reasonably tenable conclusion in the premises. Most cavities of the body are now open to investigation, by sight or feeling, by catheteri-

zation, by trans-illumination, by the Roentgen ray, by the work of the laboratory. We err usually because we do not use the means at hand, or because our fields of vision are too circumscribed to take in the whole field.

In adult life, the victim of chronic disease, another difficulty arises through the revelation of multiple foci and sub-foci. Here intuition, judgment, experience in determining relative values, is worth its weight in gold. But we can't afford to let the matter rest there for, in my opinion, this is the crucial point. With the decision that such and such an infectious focus bears an etiologic relation to the ailment in question we are put upon the defensive. The assertion is subject to proof, and we should be made to prove the connection oftener. It is possible to do so in any laboratory where animals are available for research. If the organism from the suspected focus can be obtained, injected into an animal, will reproduce the disease in that animal in from forty-eight to seventy-two hours, and an organism be recovered from that lesion identical with that from the original focus, the case seems proved beyond peradventure of doubt. Just such demonstration has been made by Rosenow numbers of times. We cannot question his results unless we are willing thus to put them to the proof.

The result of such intensive study, with the exercise of sound judgment, has been very brilliant. There can be no doubt about it. Even in the hit-or-miss way most of us are forced to work we are getting results in those cases of comparatively recent origin. Unless permanent tissue damage has already occurred, removal of the etiologic factor is curative, and, fortunately, this is true whether we have jumped at conclusions, or have laboriously proved them. In case of failure in recent cases, we have not discredited the theory, it must be assumed that we have missed the real focus.

But the converse is also true. Perhaps the greatest handicap of all in practical work is the advanced stage of disease when it comes under observation. Admit that endocarditis, nephritis, arthritis, stomach ulcer arise in chronic focal infection, it is but childish credulity to expect removal of the focus, even though etiologically proved, to restore warped valve, to replace destroyed kidney tissue, to melt away exostoses and ankyloses, or to heal

sclerosed, callous ulcer. In our survey of the patient we ought to be able to arrive at something of a prognosis as well as a diagnosis. Surely we cannot cure him by removal of the focus; but just as surely we cannot relieve him unless we do clear up all foci. The improvement in general health, the prevention of exacerbations and perhaps of progression of the lesion, will repay our efforts.

This leads me to say in conclusion that I believe it does not yet appear what lies before us in this field. If we were not accomplishing anything of benefit to the present generation of patients, I am convinced that in the field of prophylaxis lie great accomplishments. To guard the next generation against the late result of focal infections is surely a consummation worth while. With the care and attention now paid to the teeth of children, with the ready yielding of parents to the total enucleation of diseased tonsils, with the nationwide crusade against the great black plague of venereal disease, I am confident we are building upon a sure foundation. We shall learn, I confidently believe, that not only the recognized inflammatory diseases, but a large number of the so-called degenerative lesions are the offspring of insidious focal infections, that by early eradication the serious toll these degenerations now take of American manhood and womanhood at the most productive periods of life can be curtailed. If this be true, then our inventory of values, of the profit and loss through the study of focal infection, shows a substantial profit to our account.

George Ben Johnston Memorial Hospital.

MEDICAL TREATMENT OF SYSTEMIC MANIFESTATIONS OF CHRONIC LOCAL INFECTIONS.*

By F. J. WRIGHT, M. D., Petersburg, Va.

I shall not attempt to cover the whole field as indicated by the subject of this paper, but will take up the most important, in my judgment, and give a brief outline of the treatment, necessarily omitting many details.

At the outset let me say that the focus or foci of infection should be removed when possible, as early as compatible with the general condition of the patient, whether the foci

*Read as part of Symposium on Systemic Manifestations of Chronic Local Infections at the fifty-second annual meeting of the Medical Society of Virginia, Lynchburg, Va., October 18-21, 1921.

be the gums and teeth, tonsils, the accessory sinuses, gall bladder, fallopian tubes, prostate, urethra, appendix or pelvis of kidney.

The most important of these systemic manifestations of chronic local infections are: Acute rheumatism, subacute or chronic arthritis, gonorrheal rheumatism, chorea, endocarditis, pericarditis, myocarditis, pleurisy, iritis, toxic goiter, gall bladder infections, asthma, hyper and hypotension, arteriosclerosis, the nephritides—acute and chronic—the various grades of anaemia, gastric and duodenal ulcer, purpura, the various psychoses, neurasthenia and septicemia.

IN ACUTE RHEUMATISM the patient should be kept in bed between blankets. The diet should be nutritious, but light and sufficient to meet the caloric needs of the body. The bowels must be kept well open with some of the well known laxatives, aided by cooked fruits, such as stewed apples, peaches or prunes. The inflamed joints should be wrapped in cotton wool and so fixed by pillows or otherwise as to prevent motion or to reduce it to a minimum.

Sodium salicylate should be given in twenty to thirty grain doses well diluted with water every two hours until the effects of the drug are obtained, then in smaller doses as needed to ease pain and reduce fever. Neo-cinchophen or cinchophen, in fifty to 200 grains daily, seems at times to act better than salicylates.

Sodium bicarbonate is given in thirty to sixty grain doses, daily, except when using neo-cinchophen, not being an acid, the alkali is not so much needed.

At the Post Graduate Hospital, New York, they give to adults 120 grains sodium salicylate with sodium bicarbonate, one drachm per rectum, an hour after the cleansing saline or soda enema. The next day the dose is about ninety grains; then from sixty to ninety grains daily, as needed. The drinking of water should be encouraged. A daily sponge helps to keep the skin in good, active condition.

If endocarditis or pericarditis supervene, it means prolonged rest in bed with an ice bag to precordium and pushing the salicylates. If in pericarditis effusion takes place, aspirate as often as indicated. Digitalis may be needed. The most important thing in treating this condition is absolute rest in bed until the tempera-

ture remains normal all day and the pulse is well below ninety. If pleurisy complicates, strapping the sides with adhesive plaster will relieve pain. Continue the salicylates. If effusion takes place, aspirate, but not too early, as nature frequently absorbs a large pleural exudate. Sooner or later, iron and arsenic will be needed.

Hyperpyrexia is controlled best by ice to head and cold sponges.

Don't forget that rheumatism in a child is rarely ever typical, but more frequently is manifested by growing pains, stiff neck, endocardial involvement, or chorea.

IN TONSILLITIS I know of nothing that gives so much relief as the salicylates, pushed to physiological effect. Rest in bed on a soft diet until the acute symptoms have subsided. Of course, the bowels should be moved daily. For local applications, forty to fifty per cent argyrol applied to the tonsils every three or four hours is as good as anything you can use. Some use forty per cent silver nitrate at once, if seen early. Ice to throat gives great relief at times. Don't allow patient out of bed too soon, because it is from this very infection that we get most of our crippled hearts. Examine urine in each case frequently.

CHOREA is, to my mind, one of the most serious and important diseases of childhood. No child should be treated for chorea without being put to bed for from four to six weeks, at least. A light, but nourishing diet, and laxatives as indicated. Here also, one of the salicylates is the drug of choice, given preferably per rectum once daily, from forty-five to sixty grains with thirty grains sodium bicarbonate. Most of us give Fowler's solution of arsenic, beginning with two or three drops after meals and increasing one drop daily until the point of tolerance is reached. The bromides or chloral may be needed to allay the excessive muscular movements and to procure rest. Luminal in from one-fourth to one-half grains once or twice daily is effective in controlling nervousness. Examine the heart frequently for evidences of endocardial involvement. The kidneys should be watched. Whether or not you use arsenic, as advised above, it is apt to be needed sooner or later with some form of iron to combat a secondary anaemia.

ACUTE NEPHRITIS, so often a systemic manifestation of local infection, is best treated by

rest of the kidneys as much as possible. Limit the fluid intake to at least the output. Keep the skin warm and bowels active, the former by rest in bed between blankets, wet and dry hot packs; the latter by salines. A salt-free diet when there is much edema. I strongly urge the Karell diet for a few days. This, as you know, consists of 800 c.c. of milk, daily—no other fluid or food. Later, as the kidneys improve, put the patient on a high carbohydrate, purin-free diet. Iron in some form will be needed sooner or later. Don't allow patient out of bed too soon. If convulsions occur, they can be controlled best by hot packs, free bowel eliminations, and, if necessary, chloral hydrate or the bromides.

Besides the removal of the foci of infection in chronic nephritis, the diet is the most important factor in the proper treatment. We limit or exclude proteids as much as possible, bearing in mind that some protein is necessary. Do not allow highly seasoned or spiced foods, pastry, pies or cakes. Allow cereals, cooked fruits, oranges or grape fruit, green vegetables, milk, butter, bread, rice. Do not allow big meals at any time, remembering that quantity is almost as important as quality. If edema is present, a salt-free diet should be instituted and the fluid limited. Keep the skin active by frequent warm baths. Blood chemistry will aid you in the management of the case as well as the prognosis. Frequent and careful urinalyses should be done. Excessively high blood pressure can be controlled by venesection or some of the nitrites. The heart is supported by digitalis when needed.

The so-called essential hypertension and arteriosclerosis are treated much as chronic nephritis. The main dependence is the diet, as mentioned above. If the blood pressure is dangerously high, a timely venesection is frequently a life saver. One of the nitrites should be given at frequent intervals, but for such time only as needed to meet urgent indications for reduction of pressure. I have found erythrol tetranitrite, in grains one-half to one, every four hours, one of the best of these remedies. Sodium nitrite, in one or two grain doses, but at shorter intervals, will frequently act well. Sooner or later the heart will need active support and digitalis is the best drug. Sometimes this is very well given along with the nitrites. Due attention must be given to

the bowels—see that they act daily. Avoid as much as possible the acute infections. Guard against exposure, cold, etc.

ASTHMA, a condition, I dare say, all of us dread, is sometimes due to local infection. If so, its removal works marvels. For the paroxysm, I know of nothing that gives such quick relief as epinephrin in ten to fifteen minim doses hypodermatically. Morphine will be demanded frequently. In the interim, belladonna or atropine, iodide of potash, and Fowler's solution seem to do good in some cases. An autogenous vaccine works wonders at times. If we ever find a cure for asthma, I think it will be some kind of vaccine. There is much to make us think the paroxysm of asthma is an anaphylactic reaction. Every effort should be made to ascertain what proteid or proteids are responsible for the attacks. Advise avoidance of dusty, crowded places and keep in the open air and sunshine as much as possible. Give tonics or hematics as needed. A good nourishing food of milk or such other articles of food as are not contra-indicated is demanded.

Much can be done for the sub-acute or chronic ARTHRITIDES if we can find the cause and remove it before great damage has been done to the articular and periarticular structures. Most of the arthritics need supportive treatment, a good nourishing diet as milk, eggs and red meats. Iron and arsenic and cod liver oil are frequently needed. I think a mistake is frequently made in these cases by limiting the proteins when, in my judgment, they should have all they can assimilate. Some claim good results from the injection of foreign proteins subcutaneously. Typhoid vaccine is conveniently used to produce the so-called "protein shock." I have no doubt that at times much good is accomplished. Do not wait for advanced changes in the articular structures and expect to get good results. You may stay the progress but cannot restore the damage to the articular surfaces. Here, too, an abundance of fresh air and sunshine is important. Helio-therapy is reputed to be of service. Prevent as far as possible ankylosis in a position that hinders most the use of the joints.

Gonorrheal rheumatism has been, in my hands, unsatisfactory to treat. Here you can expect a chronic, long drawn out affair. An abundance of fresh air and sunshine, and a

good light nutritious diet are necessary. Heat and proper support of inflamed joints relieves pain and reduces swelling. I believe the vaccines do good if given to the point of an active reaction. Bier's hyperaemia applied for several hours daily probably hastens resolution and restoration of the function of the joints. Remove the focus by appropriate treatment, whether it be the urethra, prostate, fallopian tubes or vagina. Medicines do little good except for the relief of pain, combating of anaemia, and tonics as indicated. Laxatives must be used as needed. Give daily warm sponge baths. The pain can usually be relieved by aspirin, but you may need codeine heroin or even morphine for a short time.

TOXIC GOITER, the dread of both the surgeon and the internist, is best treated by prolonged rest in bed in charge of a competent nurse. Exclude all visitors. Give an abundance of light, nutritious diet, such as milk, eggs, fruits, lamb, chicken, and vegetables. I believe since it has been possible to estimate basal metabolism that by prolonged rest metabolism can be so much lowered that surgery can offer us more than heretofore. Sedatives, such as quinine hydrobromate, seem to do good in some cases. I believe, personally, that medicines do little good, there being no specific known. An ice bag to the precordium quiets the heart. Give laxatives as needed. Sometimes it is necessary to give veronal or trional to produce sleep.

For the ANAEMIAS, depending on the degree, I advise, if severe, transfusion of citrated blood, taking the usual precaution in selecting donor and typing. While the reaction is sometimes severe, the results are frequently marvelous. The World War did a great deal for humanity in developing and simplifying transfusion. Milder cases of anaemia usually yield readily to rest, fresh air and abundance of good food. Iron and arsenic are needed, however, to replace the hemoglobin and red blood cells. You can probably get quicker results by using iron and arsenic intravenously. Cacodylate of soda intramuscularly is as good arsenic preparation as we have. Bland's mass and Fowler's solution are to be commended and frequently act as well as any. Diet is an important factor; milk, cream, eggs, meats, vegetables and fruits are given in abundance.

In PURPURA, I know of nothing that does

as much good as transfusion. The subcutaneous injection of horse serum sometimes acts well. Calcium lactate or chloride in 10 to 20 grain doses every two hours is frequently beneficial. In these cases, careful attention should be paid to the gums and oral cavity. Iron and arsenic are indicated here also.

NEURASTHENIA cannot be handled to the best advantage except in a well conducted hospital. Here rest, good nourishing food, good nursing, exclusion of all visitors, together with the proper baths, massage and electricity, usually bring about good results. It may be necessary to use tonics such as iron, quinine and strychnine. It is best, if possible, to avoid the use of sedatives and hypnotics. If necessary to resort to these things, use them for as short a time as possible.

GALL BLADDER infections, usually sooner or later surgical, need medical treatment. Much can be done in advising the proper kind of food. If the patient is suffering from hyperchlorhydria, alkalies such as magnesia and sodium bi-carbonate given after meals and tincture of belladonna in 10 to 20 minim doses three times a day before meals give great relief. These, with a diet of cereals, milk, bread and butter, vegetables and eggs to the partial exclusion of lean meats, do better than on a high proteim diet. I believe the good that is received from olive oil is due to the fact that it relaxes the spastic pylorus. Hence, I advise giving olive oil in wine glass doses three times a day before meals. The bile salts seem to do some good. Sodium sulphate or acid phosphate are indicated. On the other hand, if a hypochlorhydria is present, muriatic acid is needed. In acute cholecystitis, rest in bed, an ice bag over the gall bladder, and a liquid diet until the acute symptoms have subsided are recommended, due attention being given to elimination.

The essentials in the treatment of gastric or duodenal ulcer are rest in bed for first three weeks, selection of the proper food, and neutralizing, preferably alkalinizing the gastric juice. For the ordinary case without complication, for first three days give hourly between 8 A. M. and 8 P. M. an ounce and a half each of milk and cream. Between these feedings from 8:30 A. M. to 8:30 P. M., give following powder in gr. doses: magnesium oxide 5, magnesium carbonate 5, and sodium bicarbonate 15. The fourth day and every day for

three weeks at 9:30 A. M., 4.30 and 9:30 P. M., the duodenal tube is swallowed and enough gastric contents aspirated for test. If free hydrochloric acid is present, increase your soda. The fourth day diet is the same as for the three previous days except one soft boiled egg at 8 A. M. Fifth day the same as third day plus one egg at A. M. and three ounces well cooked cereal at 9 A. M. Sixth day same as third day plus 8 A. M. one egg, 9 A. M. 3 ounces cereal, 11 A. M. one egg. Seventh day same as third day plus 8 A. M. one egg, 9 A. M. three ounces cereal, 11 A. M. one egg, 12 noon, 3 ounces cereal. Eighth day same as third days plus 8 A. M. one egg, 9 A. M. 3 ounces cereal, 11 A. M. one egg, 12 noon, 3 ounces cereal, 4 P. M. one egg. Ninth day same as third day plus 8 A. M. one egg, 9 A. M. cereal, 11 A. M. one egg, 12 noon cereal, 4 P. M. one egg, 5 P. M. cereal. Tenth to 14th day, same as third day plus 8 A. M. one egg, 9 A. M. cereal, 10 A. M. one egg, 11 A. M. puree of peas three ounces, 12 noon mashed potatoes three ounces, 3 P. M. cereal three ounces, 4 P. M. one egg, 5 P. M. cereal, 6 P. M. custard. Fourteenth to 21st days, same as third day plus 8 A. M. one egg, 9 A. M. three ounces cereal, 10 A. M. one egg, 11 A. M. puree of peas three ounces, 12 noon mashed potatoes three ounces, 1 P. M. milk toast, 2 P. M. tapioca pudding three ounces, 3 P. M. cereal three ounces, 4 P. M. an egg, 5 P. M. cereal, 6 P. M. custard. Days 21 to 28 patient to be up and about in room. For breakfast milk and cream one glass, two eggs, three ounces cereal and apple sauce, 9 A. M. glass of milk and cream. For dinner milk and cream one glass, scraped meat, soft bread and butter, puree of vegetables, mashed potatoes, custard or pudding; 3 P. M. glass of milk and cream. Supper milk and cream, one glass, boiled rice, cereal or macaroni, crackers or bread with butter, one egg, custard or pudding. 9:30 P. M. milk and cream, one glass. After three weeks powder to be taken every two hours between feedings. Some add bismuth subcarbonate to these powders and give tincture of belladonna in 10 to 20 minims before each meal. These patients should be kept on the three to four week diet for from nine to twelve months, having fluoroscopic examinations made at intervals of two or three months to determine the progress. If the dietetic and alkaline

treatment cannot be carried out then gastro-enterostomy should be done. Some claim good results by feeding through a duodenal tube, thus allowing rest to the stomach. Conditions requiring operations are pyloric stenosis, perforation, perigastric adhesions and hemorrhage, and abscess in the walls of the stomach.

If hemorrhages occur, rest the stomach for 24 hours and use an ice bag over the epigastrium, use morphine as needed.

Of course there are other diets used in the treatment of gastric and duodenal ulcer, but the general principle is the same. The last word has not been said on this subject yet. I hope the future has something better to offer.

SURGICAL TREATMENT OF SYSTEMIC MANIFESTATIONS OF CHRONIC LOCAL INFECTIONS.*

By R. L. PAYNE, M. D., F. A. C. S., Norfolk, Va.
Surgeon, St. Vincent's Hospital.

We may sum up the surgical relief of distress and disturbance of bodily function caused by chronic local infection in one brief but comprehensive word, namely, REMOVAL. The problem cannot be solved, however, by briefly advocating the necessity for complete drainage or thorough surgical removal where chronic local infection exists, for there are many puzzling sides to the solution of the trouble in an individual case which will not only call for a most careful and complete study but the most astute pathological discrimination.

Our increasing knowledge regarding the relation of chronic local infection to wide-spread and disabling diseases has made possible the prevention of much suffering and the means of restoring to health many of those victims who, through our ignorance, have been condemned to disability and even permanent invalidism. So much attention is being given to the importance of local infection by the medical and dental profession, and the laity as well, that we are in great danger of attributing too much importance to these chronic local infections, advising radical measures which are not warranted, expecting immediate and too great results, giving a favorable prognosis when the outlook cannot be substantiated, ignoring other important pathological

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factors and neglecting certain medical measures to the disappointment of the patient and the discredit of our profession.

The treatment of chronic local infection by surgical removal or thorough drainage would be very simple, if through our diagnostic survey we could determine accurately and positively upon only one area of pathological involvement. The presence of multiple areas of chronic infection in the body, the difference in characteristics of the same organism found in the original focus, and the metastatic chronic lesions together with the almost daily variations in the resistance of the patient create a most difficult problem from the standpoint of surgical relief, for surgical measures offered these patients are frequently radical and often more or less hazardous and surgeons, as a class, cannot advocate and undertake one procedure after another so readily as can our more fortunate brethren of the medical specialty.

The judgment of the discriminating surgeon is at once baffled by the fact that, while many patients present themselves with symptoms of systemic manifestations that evidently have their source in a chronically infected area of tissue, there is a very much larger number of persons who are subjects of chronic local infection of equal or greater extent caused by retained bacteria, but have little or no evidence of secondary systemic manifestations in the joints or other organs. Evidently, the reaction of the fluids and cells of the body which we are accustomed to speak of as resistance, determine to some extent the outcome of a chronic local infection. In chronic localized infection the infectious organisms are afforded a safe residence in which they may multiply and from this point invasion of the body may occur at any time, thereby producing systemic manifestation, especially when the resistance is temporarily low, but one local focus of chronic infection may have been productive of systemic disturbances on yesterday, while today it may be inactive and another focus infected with another organism or even a different strain of the same organism may be the exciting factor with a different trend of symptoms.

Clinical manifestations of chronic local infection result more often from lesions entirely closed than from those in which external drainage is free, for the degree of confinement of

the infected area by neighboring tissues does materially influence the passage of organisms through lymphatics and blood vessels. Arguing along the lines of conservative surgery, we might reverse our first opinion formed from the last statement, and say that in those conditions in which symptoms persist in spite of free external drainage, nothing short of complete surgical removal will suffice to relieve, whereas, in those confined areas of chronic local infection without external drainage, often the surgical provision of simple free drainage may eradicate the focus and bring about a relief of the systemic manifestations. This is a broad surgical principle and must be applied after careful deliberation and surgical judgment based on a wide experience. In the application of surgical principles to the eradication of chronic local infection one of the principal pitfalls into which surgery is prone to drop is by too radical measures, thereby laying open excessive areas of tissue and lymphatic vessels through which an overdose of septic absorption may occur.

The defenses of the body against bacteria are maintained, as far as we know, by the means of the anti-bacterial action of the fluids of the body, by the action of the leucocytes and other body cells of phagocytic characteristics. The resultants of these last enumerated forces we have learned to call resistance, but in the application of surgery to single or multiple areas of chronic local infection, the surgeon must always remember that resistance to infection or immunity is only relative, rarely a constant quantity, and changes in response to changes in physical environment, to errors in diet or fatigue, to severe local injuries and exposure to cold. Too much emphasis cannot be made upon discretion and conservatism in dealing with the surgical eradication of chronic foci of infection. The general physical welfare of the patient should be improved to the highest possible point before surgery is undertaken in these cases for the danger of presuming too much on natural immunity is frequently seen in the serious infections, with sometimes general sepsis and death which frequently follow the removal of apparently benign tonsils or the extraction of many infected teeth at one time.

With regard to radical surgery, I think we may safely indicate that where definite chronic local infection, inciting systemic manifesta-

tions, can be proven to exist in a tooth or many teeth, in the tonsils, in the gall bladder, the spleen, the appendix, the fallopian tubes, and the seminal vesicles, surgical removal is indicated providing the general condition and resistance of the patient make the safety of the operation a justifiable procedure. Less radical measures, such as free and prolonged drainage or other conservative surgical measures, are indicated when chronic local infection is found to exist in the sinuses of the head, in the ducts of the liver, in the intestinal tube, in the kidney, the uterus, the urethra and the prostate gland.

A word of advice concerning the use of vaccine in these conditions would seem most pertinent at this time for some good results have been obtained from the use of vaccine, but I think the failures following the employment of vaccines in chronic local infection have far outnumbered the good results obtained. Rosenow's work has thrown tremendous light on this subject and may be applied to vaccine therapy of chronic local infection as follows: The character of the micro-organism found in the original focus of infection may be quite different in characteristics from the micro-organism found in the chronic metastatic focus of infection existing at the same time and producing the systemic manifestations in the individual. In other words, the organisms found in the metastatic lesion have undergone a change and Rosenow states that likely it is in the focus of original infection that changes invariably occur and the different affinities for various structures are acquired. This fact should be actively kept in mind when offering encouragement to a patient suffering from chronic local infection through the use of autogenous vaccine and always a guarded prognosis should be made when instituting this form of treatment. Rosenow states that the poor results in some cases of chronic local infection, for example, following the use of autogenous vaccine prepared from the tonsils or other presumable focus, may be due to the fact that the organisms found in the focus at the particular time when the cultures were made were not like those actually infecting the tissues and, if this be the case, the vaccine therefore would fail to contain the proper antigen.

If discriminating diagnosis relative to the multiple areas of chronic local infection can

be definitely made, then in most instances the surgical treatment is clear cut and simple, but the differences in characteristics of the same organism in separate foci and the intimate relationship between the lymphatics of known connected areas makes the question of what is the predominant point or primary focus of infection very difficult of discrimination. The close relationship in the lymphatics between the tonsils and teeth makes it entirely probable that recurrent and repeated infections in the teeth have as their exciting factor primary foci in the tonsils rather than the reverse. The close relationship existing in the lymphatics of the appendix, gall bladder and liver, between the bowel, bladder and kidneys and numerous other anatomical combinations, makes the problem to the surgeon very difficult and only by clear thinking, most careful study, and discrete surgical judgment, can we hope to give relief to these most distressing manifestations having as their causative factor chronic local infection.

DISCUSSION OF PAPERS BY DRs. SMITH, WRIGHT AND PAYNE.

Dr. W. S. Gordon, Richmond: The subject selected for general discussion is a very wide and important one. We are indebted to the leaders for the excellent papers presented. I can hardly do more, in the time allotted, than to sum up what has been said. In various systemic disorders we should be on a careful look-out for the chronic local infections which are frequently the starting points of more extensive disease. Searching routine examinations should not be neglected when the cause is not obvious. The past history of a patient may be the only clue to a correct diagnosis in the absence of present definite symptoms.

Again, failure to correct a systematic disorder with a chronic local infection may lead us to think in other directions. We should not forget that disorders of metabolism are often accompanied with fever and other symptoms usually attributed to infection. The toxins of perverted metabolism do their injurious work pretty much in the same way as the toxins of microbes. Gout in the big toe; an overloaded stomach, or as I have known—an undigested piece of horse-chestnut in that organ; intestinal decompositions; and a number of familiar conditions are capable of producing profound systemic manifestations. It behooves us to avoid running to extremes; for I think the increased and ever increasing knowledge which we have of infections has led in many instances to the minimizing of metabolic disorders in the protection of disease.

Treatment resolves itself into a removal of the chronic local infection, when this is possible, and the management of the systemic manifestations according to well accepted methods.

Dr. Harry T. Marshall, University: When attention is focused upon a special point such as the chronic local infections, people are very apt to think of such local infections as being completely different from other pathologic phenomena. It may,

therefore, be timely to remind you that chronic local infections represent just one aspect of the general picture of inflammation. I have no doubt that physicians with large practices can establish types of infection arranged so as to present a series of transitions from simple acute inflammation through to the typical local chronic focus such as one sees at the root of a tooth or in the tonsil. Moreover, such a chronic focus will be found from time to time as the starting point for a fresh acute inflammatory flare-up, or even for a pyemia.

From the point of view of the pathologist, it is interesting that the histologic picture, and occasionally, the blood count, have distinguishing features from those of acute inflammation.

Dr. Wm. J. Mayo, Rochester, Minn.: There are many sources of focal infections, among which the most common are the teeth, the tonsils, and the gall-bladder. We must not forget that infectious agents first enter the blood stream and are carried by it to the tissues which they secondarily damage. The essayist has spoken words of wisdom in urging the removal of such foci as may be found. Unfortunately, it is quite possible that a chronic infection has established a habitat in secondary tissues so that the removal of the primary sources may fail to cure the later manifestations.

Doctor E. C. Rosenow's splendid work on the selective affinity of organisms, especially of the streptococcus group, for certain tissues, has been most illuminating. For instance, he has had strains of streptococci culture from appendicitis that have produced appendicitis in 70 per cent. of the animals injected. Again, he has cultured streptococci from the gall-bladder that have attacked as high as 80 per cent. of the gall-bladders in animals experimented upon without markedly attacking other tissues. Is it possible that we may develop specific chemotherapy to act through the blood? This has so far been done only in protozoa, as quinine in malaria. So far this has not been accomplished for bacteria which are closely allied with the vegetable world and are more resistant than the human tissues. Therefore, the study of the blood as an organ is of the utmost importance, as most diseases are blood-borne.

PUBLIC HEALTH WORK IN LYNCHBURG.*

By S. H. ROSENTHAL, M. D., Lynchburg, Va.

In 1910 a movement by several of our progressive citizens was initiated to establish in Lynchburg a modern and a scientific department of health. The movement was successful and in August 1910 the new Board began functioning. Prior to this time all health activities in the city were at a low ebb and practically none of the modern scientific methods to prevent disease was exercised. Health work consisted of medical treatment of invalid paupers.

The Health Department at once formulated necessary regulations for the report and control of communicable diseases. When this

task had been finished, the Department made a complete and accurate sanitary survey of the entire city. The survey indicated approximately 4,000 dry closets of the old fashioned exposed type within the corporate limits. The typhoid cases were all investigated to a point of minute detail as soon as reported and a summary of the facts showed that 85 per cent. of the cases were located in the unsewered sections or drank spring or well water. There were about 1,500 families or 4,500 people who drank out of some 200 springs and shallow wells scattered in and about the city. The facts were indisputable and overwhelming. Lynchburg was and had been for years a typhoid town. Typhoid, the recognized typical filth disease, was here again demonstrated in unmistakable manner as being fed by the filth of bowel discharges successively to the susceptible members of the population.

The elimination of typhoid meant the screening or elimination of the dry closet and the abolition of the spring and well. The health officials believed in elimination of the privy rather than in its screening and, while a screening ordinance was adopted and enforced, it was toward the elimination of the dry closet altogether, on the theory that it alone was really sanitary and permanent, that the real energy of the Department was directed. As a result, today, instead of 4,000 privies the city has 159 and these are scheduled for gradual removal, though their removal will probably be very expensive. But it matters not how great the cost, the real cost will be small when it is borne in mind the protection against disease secured.

The drop in our typhoid rate, however, though steady, has been somewhat chequered and serves to illustrate the several influences that affect the prevalence of an epidemic disease. For example, although the unsewered houses gradually diminished in number, at times there would be an increase in the typhoid cases. One of the main reasons for this was, what most of us in Lynchburg only too easily remember, the appearance of algal growths in our drinking water. Algae, the name of a class of plants that often come in water, frequently make the water disagreeable, but not dangerous to drink, just as onions impair the attractiveness but not the wholesomeness of butter. As a consequence of algae,

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people drank extensively well and spring water which was oftentimes polluted, and it will be recalled that an excess of 4,000 people ordinarily drank from wells and springs. Again in 1917 the Pedlar main pipe broke and for a week or more James River water was pumped directly into the reservoir. The water was partly but insufficiently treated with chlorine and the Health Department was fully prepared for a typhoid epidemic as the James water was unquestionably polluted. A small epidemic did indeed follow, but the facts showed that 26 out of the 28 cases drank well or spring water, and thus the James indirectly but not directly caused an out-break. All of these wells and springs by actual analysis gave evidence of pollution. One of the springs illustrated perfectly the danger always lurking in springs in a thickly settled community. This spring was fitted up like a model one. The water flowed crystal clear out of a cast iron spout and was concreted all around, the nearest house on the same side of the ravine as the spring was 300 yards distant. A cursory survey would have pronounced the spring safe, and an actual analysis had indeed failed to find pollution. In July 1916 several cases of typhoid, which finally grew to about 16, pointed unmistakably toward this spring, and an analysis now showed gross pollution. Thorough search showed a broken 12 inch terra cotta sewer pipe 56 feet away whose contents were oozing into one of the spring feeders.

Our experience in Lynchburg is common to other places, and I may be pardoned for a few reflections. No city is safe from typhoid and other intestinal diseases with unsewered houses dotting the community, and springs and shallow wells throughout the town. To have a city buttressed against the diseases of the above class, the city must be completely sewerred and the springs and wells abolished. City water must not only be safe, it must be attractive. Unless attractive, people will be suspicious of it and will not drink it. In 1919 a modern filtration and aeration plant was installed and the city water both in its attractiveness and safety has no superior, so the abolition of the well and spring has become possible. Prior to filtration it was not possible. People will not drink muddy or bad smelling water, if a clear odorless water is

available, no matter how much health authorities warn or preach. In the algae periods, old wells were re-used and springs that had been concreted up were broken open.

The second accepted sanitary index in a community is the infant death rate, and the attention of the Bureau of Health has from the first with increasing energy been directed to reducing this index. The results are highly gratifying and the figures are as follows:

	Average
1911-15 --- --	143.7 per 1,000
1916 -----	112.8 per 1,000
1917 -----	110.9 per 1,000
1918 -----	109.0 per 1,000
1919 -----	86.0 per 1,000
1920 -----	71.1 per 1,000

Our death rate among infants in ten years has been more than cut in two. What has done this? Various things, increased sewerage, reduction of flies, safe milk, attractive water, but especially the visiting instructive nurse. The nurse visits all cases where births are reported by midwives and all other cases when requested. This latter number is continually growing. A tremendously important agency also is the literature on "How to Keep the Baby Well", which is mailed to every mother immediately upon receipt of birth certificate. Some mothers, however, cannot read and here particularly comes in the great value of the public health nurse. Another part of the work the nurse is developing is prenatal visiting. This important work is slowly but surely growing. Our records show that a mother has no business engaging in laborious and exhaustive work for extended hours a few months before or after the coming of her baby. Fatiguing labor at this time is criminal. Of the 65 deaths under one year in 1920, 31 died under one month and only 5 in from 9 to 12 months of age. It is out of the question to ascribe to these 31 very young infants, diarrheal troubles from infected milk, for these children under one month were nearly all nursing children and not artificially fed. The real trouble seems to have been chiefly due to the ignorance of mothers and rather poor obstetrical care. We cannot hope then to make any further great cut in our infant mortality rate from an improved milk supply for the facts show that it was not the quality of milk that killed the infants in Lynchburg in 1920.

That dread disease tuberculosis has also been a special object of attack by the Bureau of Health. Lynchburg was the first city in the South to employ a special tuberculosis nurse, that is, one whose work is devoted exclusively to tuberculosis. This nurse makes it her duty to visit all cases, rich and poor, who wish her services, and undertakes to establish sanatorium conditions in the home. She teaches the sick how to get well and the well how to avoid contracting the disease. The theory is that if wholesome food, plenty of sleep and fresh air will cure tuberculosis, it will also prevent tuberculosis, and the purpose of the Bureau of Health is to prevent as well as cure. Prevention comes mostly by education. To the poor, this nurse supplies free milk, eggs and other necessities.

I believe that work done in the home similar to that done by the specially trained nurse is superior to that done even by the sanatorium, although the sanatorium is for many cases indispensable and should not be disparaged. Sanatoria have not the capacity to accommodate over a fraction of the tuberculosis patients, and even if the patients could be persuaded to go, which oftentimes they cannot, this remedy, for sheer physical reasons, would be impossible. But the patients can all be reached by the visiting nurse and she not only reaches the patient, but what is of equal or more importance, the other members of the family as well. The patient is also at home, among his own friends and thus retains his good spirits which sometimes are lost at a distant place. If incipient, he may continue at work. The nurse in Lynchburg now has 156 cases under her care and her success is most encouraging. The tuberculosis death rates have been as follows:

	Average
1911-15 -----	205.5
1916 -----	170.9
1917 -----	197.3
1918 -----	170.2
1919 -----	139.9
1920 -----	109.7

The figures have been cut almost in two, and it would seem that we may begin to hope that tuberculosis can be eliminated in time like typhoid fever, but the work will be harder and take a much longer period.

In answer to the question, has the city a tuberculosis sanatorium, a negative reply must

be given. A tuberculosis department of 22 beds for white and colored at the Lynchburg Hospital was abandoned and made the colored department of the general hospital. In lieu of this, indigent tuberculosis patients are sent to the State sanatoria—Catawba, Blue Ridge, or Piedmont—and their expenses paid for at these institutions.

An important phase of tuberculosis work is the screening of milk against possible contaminations. The agency of affected milk in spreading tuberculosis among children is, of course, well established. In April 1913, the city adopted an ordinance requiring all milk sold or delivered in the city to be pasteurized or drawn from tuberculin tested cows. Pasteurization was begun by the creameries, but the law was so constructed that all cows had to be tested. The result was that Lynchburg was the first city in America whose people enjoyed immunity in possessing milk immune from bovine tuberculosis.

It is now admitted among sanitarians that the most difficult and the most important tasks confronting modern preventive medicine are the venereal diseases. The startling statistics furnished by the World War have made further avoidance of this too long delayed work impossible. In Lynchburg, before the war, the overwhelming urgency of this matter was recognized and the Bureau of Health undertook it. The laboratory instituted free Wassermann tests for physicians, the first public health laboratory in the South to make free Wassermanns and every other laboratory facility was offered to aid the physician in doing thorough scientific work. Today, the clinic and laboratory are progressing on municipal foundation.

There are certain other activities that health departments must engage in, which at first glance would seem far afield, but which in reality are among the most important of all undertakings of a modern health program. Allusion is here made to destruction of certain insects and other animals. It is the glory of American science that in 1893, Theobald Smith established a new principle when he demonstrated in "Texas fever" among cattle, that disease may be transmitted by the bites of insects, in this disease by a tick. This principle has furnished the explanation and the means of prevention for many other diseases which

were baffling prior to Smith's time. Typhoid fever is spread partly by the housefly, the plague chiefly by the rat flea, malaria by the anopheles mosquito, yellow fever by the stegomyia mosquito, sleeping sickness by the tsetse fly, and typhus fever by the louse. To fight the above diseases, fight must be made against the insects involved and the entomologist looms up as one of the most important figures in public health. For successful prevention against insect spread diseases, the life history of the insect must be known. With the exception of flies, the destruction of the specified insects will usually make impossible the dependent diseases. Flies in Lynchburg have been much reduced by the daily cleaning of stables and screening the manure according to ordinance adopted in 1910, setting outdoor fly traps and covering garbage; and mosquitoes by draining all standing water, whether in ponds, rain barrels or tin cans. The fight against rats has not yet been undertaken though it is urgent and should not be delayed.

Under the new form of city government inaugurated fourteen months ago, the name Board of Health has been changed to Bureau of Health, and this with the Bureau of Hospitals and Bureau of Charity is grouped under the Department of Public Welfare. The Bureau of Health has a system of clinics in charge of salaried specialists who diagnose, treat, and operate free for those unable to pay—the General, the Venereal, the Pediatric, the Eye, Ear, Nose and Throat, and Tuberculosis Clinics. These clinics are of inestimable value to the people of the city. Of course other clinics will at once suggest themselves, notably a dental clinic, which is a crying need. These clinics are called at present Bureau of Health Clinics; they should more properly be called the out-patient department of Lynchburg Hospital for all the clinicians are on the regular staff of this hospital, which as indicated above is included under the Department of Public Welfare under the title Bureau of Hospitals.

THE NECESSITY FOR REVISION BY THE HOSPITALS OF THE NURSE- TRAINING COURSE.*

By J. ALLISON HODGES, M. D., F. A. C. P., Richmond, Va.

The necessity for this revision is more apparent at the present time because of the acute

shortage of pupil nurses, and because of apparent decadence of interest in nursing as a profession by the public generally. These conditions have brought about a serious and vital problem, which must be faced and solved by mutual endeavor, and needed reforms.

This shortage of nurses is in part comparable to a like shortage of doctors in the entire country, but not directly due to a decrease in the number of training schools for nurses, as has been the case in the decrease of the number of medical schools. Unquestionably, the decrease in the number of medical schools within the past fifteen years from 160 to 82 in number, and the consequent decrease of medical students from 28,000 to approximately 12,000, is in part the cause of the shortage of physicians, but, in the case of the nursing profession, this is not true, for there has been, on the other hand, a large increase in the number of hospitals throughout the country, especially private and community hospitals, and apparently there should have been also, an increase in the number of nurses graduated annually. This increase in the number of hospitals, however, has been within a comparatively recent period, and sufficient time has not yet elapsed to insure an increase in graduate nurses, and many of the new hospitals and also old ones, which have made additions, have called upon the graduate nurses to fill the positions ordinarily occupied by pupil nurses, of which there has not been a sufficient number to supply the vacancies. Taken as a whole, consequently, the nursing situation has not improved, but in this State is becoming more acute, and causing physicians and those interested in public welfare, consequent anxiety and uneasiness, though, just at present, the training schools in the larger cities have more pupils than last year.

The hospitals are by no means wholly responsible for this decadence of interest, and it is, in my opinion, largely a matter of apparent retributive injustice that, because the physicians have in recent times made amateur service in the care of the sick unnecessary, or at least not as necessary as formerly, the public, and especially the churches, have lost much of their interest and devotion in this form of "good works," contenting themselves with the thought, if not the assertion, that it has been "commercialized," and consequently the responsibility is not theirs.

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

There are, undoubtedly then, outside of the conditions prevailing in the hospitals, many causes for this decrease of pupil entrants into the profession of nursing, but at this time, only those relating to the nurse-training course in hospitals, will be considered, and these may be briefly summarized as follows:

1. The acceptance by some of the hospitals, in this emergency, of many applicants who are unprepared educationally and temperamentally to undertake the profession of nursing, the hospitals thereby graduating inefficient nurses, who subsequently cause unfavorable criticism of the profession as a whole.

2. The length of time required to secure a diploma, exactly the same number of calendar months being now required for graduation of both doctors and nurses; in the one case, nine months in four years, and in the other, twelve months in three years.

3. The constant development and extension of the courses by the hospitals, thus making the scholastic requirements unduly excessive in comparison with the practical methods taught.

4. The resultant tendency, because of this unbalanced curriculum of theory and practice, is to make nurse-doctors, instead of clinically-educated nurses.

5. Lack of some hospitals of comforts and recreational diversions for pupil-nurses, while in training.

6. Lack of personal interest in the individual nurse by the hospitals, and the lack of continuous and co-ordinated courses of study given by the ablest and most competent instructors on some of the hospital staffs, instead of by the internes, who are often without necessary clinical experience.

7. Possible inadequate basis of remuneration of pupil-nurses by the hospitals for services rendered as private-duty nurses.

8. The tendency, because of these conditions, to make the Nurse-Training Course a matter of apprenticeship, instead of one of practical clinical education.

9. Too much time is devoted to the science of medicine, and not enough to the art of nursing, and this has had a tendency to result in special graduate nurses, instead of practical graduate nurses, willing to devote their time to the more ordinary cases of illness.

10. The nurses claim that some small hos-

pitals, and some special hospitals, not properly equipped with adequate facilities for clinically training nurses in all of the branches in their training schools, are the vital cause of a decrease in pupil nurses, and that in some of the hospitals, an unnecessary amount of work that is usually performed by housemaids is imposed upon first-year pupil nurses.

The above named causes, as relating to hospitals, and others from other sources, have produced the following results:

1. A scarcity of private-duty graduate nurses for the use of the general public.

2. An increase of undergraduates and correspondence-school graduates.

3. An increased expense to certain semi-invalid patients in hospitals, because most of the hospitals have not had sufficient nurses to perform the usual floor duties.

4. The necessity of extra nurses on other cases, because of these conditions.

5. Probable depreciation of standards, because of the exigencies of the present times.

6. A possible commercialization of the profession by some nurses, and

7. The danger of radicalism from those who have felt the results of these conditions, and may wish to institute legislative action which might endanger the present legal status of the nursing profession, as well as that of medicine.

It is entirely evident that many of the causes, as well as some of these results, can not be obviated nor prevented, nor are all of them to be considered as derelictions, in whole, of any of the hospitals.

In attempting to reach a practical basis for the solution of this question, it was decided to interview by letter a number of physicians, and also to consult with the presidents of the different nursing organizations in the State, and to this end, a letter was sent to the presidents of sixty local medical societies, as it was thought that their personal opinions would be representative of the profession of the section in which they lived, and they were requested to give their personal opinions as to the course of training for nurses on the two following points:

1. The wisdom and apparent necessity of reducing the period of nursing education to a two-year curriculum, for applicants with a high school diploma.

If this could not be effected,

2. The wisdom of establishing, through some State agency or otherwise, a school for giving an intensive but limited course in practical nursing, with no diploma, but a certificate as "trained" or "licensed attendant."

In reply to this questionnaire, sent to sixty physicians, forty-two answers were received and a summary of the opinions is as follows:

1. Two physicians disapproved of both alternatives.

2. Forty approved of some general method of reducing the course of training in some way to meet the present necessities.

3. Thirty-four recommended a specific reduction of the three-year term to a two-year curriculum, a small proportion advocating an ordinary grammar school education as a preliminary preparation, and the rest preferring a high school diploma as a preliminary educational requirement.

4. Thirty-nine approved, and the great majority urged the establishment of the course for "trained" or "licensed attendants."

It is evident that our past methods must be in part, at least, at fault, and that the future training schools for nurses must be made more efficient, and so attractive and so satisfying that the high school girls who have been taught the value and vision of personal service will be imbued with the idea of nursing as a career, and, if this is done, it is believed that the handicap to both private and public health nursing, because of the lack of nurses, will be removed.

If a nurse is educated before she comes into a training school, she should receive a credit for this, and surely, in the future, there will be for such nurses an academic reward, by allowing them to earn both their combined nurse and specialist degrees in a shorter period of time.

The past education of the nurse in training schools, like that of the doctor, has had a great deal of "padding" in it, and in the future rearranged course, the useless must be eliminated, and all schools put on an educational and clinical basis, rather than on the old idea of apprenticeship in the hospital.

Sir James MacKenzie, the great medical philosopher and brilliant general practitioner, in speaking of medical education, and the same applies with equal emphasis to that of nursing, says: "It is far better to be trained to understand a few matters thoroughly, than to

have a superficial knowledge of a great many things."

This, then, practically resolves itself into a curriculum that will be instructive, and will, in a measure, teach the pupils by clinical methods more largely than in the past, just as medical students are now taught to observe, to think and to apply their knowledge. This will require special teaching facilities that can be easily provided in an adequately equipped general hospital where the pupils can observe and study personally the conditions and disease-expressions of the more common illnesses, as they exist in everyday life.

This will mean the elevation of teaching standards over the old method, where a nurse's labor was put above her instruction; the nurse, consequently, becoming only a by-product of the institution.

With this reorganized method of putting foremost the nurse's training, it is believed that an enthusiasm would be evoked which would result in a large increase in the number of nurse entrants into the profession.

PERSONAL RECOMMENDATIONS.

To obviate, then, the past faults of the present system, and to meet these new requirements, my personal recommendations, after thoroughly studying the proposition from all angles, and feeling that, in order to get results that will be permanent and beneficial, we must "give and take" without lowering the standards in any way, but rather advancing them, are as follows:

1. The institution in the hospitals of a two-year revised and reorganized course of training for students of good moral character, and more than eighteen years of age, presenting credentials of the completion of the third year of a high school education, or its equivalent, thus putting a premium on "preparedness," by the subtraction of the third year of the professional course.

If this can not now be accomplished,

2. Require, at least, a two-year high school education and a two-year course of hospital training before graduation.

This means an advance in the present general educational requirements for entrance into the nursing profession, and also, a curtailment of one year in the strictly professional training course. My confident belief is that the public school system can be so modified and

adjusted, even at the present time, that a high school pupil desiring to enter the profession of nursing, could actually so adapt her studies to her future course, that she could merge her scholastic work directly into her chosen profession.

This has been acceptably accomplished by literary colleges in providing a premedical course, which has shortened the medical courses for bachelor of arts graduates, and it appears to me that it can be as effectually adopted by the high school authorities for those graduates wishing to enter this special field of service, and certainly the necessity is as urgent, as the opportunity would be inviting.

This, of course, would demand that the *theoretical essentials* of nursing should be taught in the high schools, but this is already provided for in the first three years of the high school curriculum, and if other branches relating to theoretical nursing should be desired, this could be accomplished easily by having some of these substitute or elective courses of study taught by certain medical specialists, who could be obtained in any community that was large enough to sustain a high school.

The prime practical benefit to be derived from this method would be the direct utilization of the high school course for a special literary purpose in enabling its graduates to educate themselves into a chosen career and profession.

The resultant reflex, likewise, on the student body in the State and on the laity in general would be beneficial, and would attract the attention of many to this field of service, who by reason of preparation and choice, would subsequently qualify as efficient and well trained nurses, because of this well defined choice in the earlier years of their educational training.

This scheme of a combined course is, to my mind, the only one that is now feasible and easy of realization to meet the demands of the present emergency, and keep the standards of the nursing profession from decadence, because of unsuitable and uneducated applicants.

The hospitals are doing their best, I firmly believe, but they cannot be expected to harvest what has not been sown, no matter how faithfully they may labor.

If something is not done, and speedily, it seems that we may "reap the whirlwind" by being forced to institute a "trained" or "licen-

tiate attendant" course to supply the demands for nurses.

The revised course of training for nurses submitted, No. 1, is decidedly my personal choice, and is intended to give an opportunity to young women who will naturally take the high school courses, to round out their education by having only two years of specialized professional work to accomplish before their education is wholly completed. It is believed that this would induce a better qualified element to undertake the profession itself on a basis which would be competitive, and attainable without undue length of time in professional preparation. It is my opinion, also, that better nurses will be the result of this method, for I do not believe that a three-year training course is absolutely necessary for the preparation, or perfection of a well educated nurse.

The present method, of the addition of a third year, was instituted originally to give the hospital authorities an opportunity to remunerate themselves in the last year of the nurse's training, by utilizing her as a private-duty nurse to increase the income of the hospital. This method is indefensible and, in my opinion, has resulted, in the case of the average well prepared nurse, in cheating her out of one year of her life work; for, to educate nurses properly, it should not be done in training schools on the theory of resultant financial reward, but on the theory of actually training the nurse, by teaching the pupil.

Furthermore, even in a three-year period, it is impossible to teach, or attempt to teach, the basal sciences of medicine, for even now, in studying the curricula required by different examining boards, it is seen that the courses are unequally balanced as to theory and practice, and that frequently too much stress and time are devoted to making a nurse-doctor, instead of a nurse proper.

It is unnecessary to criticise, but only to mention some of these requirements, to prove the truth of this statement; one State Board, for example, requires only eight periods of instruction in "diet in disease," and sixteen periods of instruction in "nursing in diseases of children (including orthopedics and infant feeding)," the latter requirement being exactly the number of periods required, for instance, in bacteriology, a most difficult subject, while, on the other hand, twenty-four periods only

are scheduled for the whole subject of the anatomy of the human body. It must be evident that such a course naturally leans too much towards theory, or abortive efforts to teach it, and not sufficiently towards the more common necessities of private nursing.

It is readily admitted that this question is a most difficult one, and that the problems have been met as successfully as possible by the examining boards, hospitals and training schools, which have labored faithfully, but there is still necessity for improvement.

I am personally, heartily in favor of higher standards, but especially in higher standards of scholastic preparation for the work, and believe that, all things being equal, proper preparation will give a better nurse in a shorter period of training. Recently, in examining the registration of nurses in the State of New York, I was impressed with the fact that a number of training schools that had been previously giving a three-year course, were decreasing the length of their training courses to two years and two months, or two years and three, four and six months, and that those hospitals still maintaining a three-year course were devoting the last year mainly to therapeutic specialties and professional problems.

The statutory requirements for graduation of nurses in that State (New York), are a course of at least two years and a preliminary education of at least one year high school, or its equivalent. The statutory requirements for a registered nurse in this State (Virginia), are graduation from at least a two-year course in an approved training school, connected with a general hospital, and evidence of "sufficient preliminary education, as may be determined by the Board." Evidently, then, some changes can be made in the requirements for graduation of nurses without violence to existing statutes in this State and without reflection upon present training schools, or the State Board of Nurse Examiners, provided, that, the professions of medicine and nursing desire them, and act in mutual faith and co-operation.

CONCLUSIONS.

1. The decrease of pupil entrants into Training Schools must be the outcome, in a measure, of unsatisfactory conditions connected with the Training Courses, and if so, it is our duty to consider and solve them.

2. The length of the course appears to be

the greatest obstacle in a competitive sense in comparison with other avocations and professions open to women.

3. The Hospital Training Course can be reduced in duration to two years, and as good, if not better nurses graduated, if the preparatory educational requirements be increased to include the completion of three years of High School course, or its equivalent, in which the applicant will have completed the necessary theoretical studies of Physics, Chemistry, Physiology, Hygiene, Dietetics, etc., as they come in their graduated curricula, and Biology, Bacteriology, etc., if desired by a special instructor.

4. It does not seem feasible nor practicable to utilize at present any central State literary institution for this purpose, but it does appear eminently practicable to accept from the High Schools of the State, or other accredited institutions, certain credits of completed work, which would prepare the nurse in theory to complete the clinical course in the Hospitals in two years, instead of three, as at present.

5. Revision of the Nurses' Training Course to this end by hospitals, would render this method entirely feasible, and by the acceptance of High School or other literary educational credits, elevate and advance the standards and efficiency of the Nurses' Training Course.

6. There has never been any direct and concerted special effort by the professions nor the public to call attention to Nursing Education, and while other phases of education have been initiated and fostered, not one of the 3,000 Nurse-Training Schools in the United States has ever received an especial endowment, and for this lack of interest in the needful development of Nursing education, the hospitals must accept their share of responsibility.

7. This suggests the advisability and apparent necessity of this Association appointing a committee of seven members to confer with a similar committee from the proper allied Nursing Associations of the State, with a view of securing relief from existing conditions relating to the Nurses' Training Course.

107 East Franklin Street.

DISCUSSION.

Dr. Charles R. Robins, Richmond: The subject of the education of nurses is a very large one and I am very much gratified to hear Dr. Hodges' paper

and to appreciate that the object of his paper is not to lower the standard of nursing. I think that one of the troubles that is bothering the doctors at the present time is the apparent reduced number of nurses that are available, but I think that this condition is not due altogether to the number of years that is required of nurses to complete their course. During the war and the period immediately following there were a great number of positions opened up for women in which the work was very light and compensation very high, and in addition little or no preliminary training was required. Under these circumstances it was only natural that young women should flock to these new fields of occupation. It also resulted in upsetting the standard for women as well as for men. They lost their taste for positions that required continuous, regular and exacting work and sought only those positions in which the work was light, the surroundings pleasant and the remuneration large. In considering the shortage of nurses we must also take into consideration the fact that the demand for nurses is greater all the time. There are more hospitals opening up and more fields in which the nurse is required. There are doubtless as many nurses in the United States now as at any other time but the shortage appears to exist because more are required. However, it is my observation that an adjustment is taking place at the present time and all fields of endeavor are approaching a more normal condition. The high price and minimum work positions are gradually disappearing and the young women are beginning to look again on nursing as a desirable occupation. I have been and am now opposed to lowering the standard of education of nurses. It has seemed to me that the doctors were so anxious to get nurses to fill their hospitals and for other purposes that they were willing to sacrifice the requirements and standards in hopes that this would induce a larger number of young women to take up the study of nursing.

Now as I understand it, Dr. Hodges' paper does not advocate the lowering of the standard but seeks to shorten the time required of nurses in training in the hospital. It seems to me that there is a great deal in what Dr. Hodges suggests and that his ideas are feasible. The ultimate success of this profession, the welfare of the sick and the good of the community and the public at large, depend on securing the right type of women for this profession. It has got to be something that appeals to the best women and the best in women, and we cannot subvert this principle and consider nurses only as they affect the convenience of the doctors and the hospitals. The training that the nurses are getting at the present time qualifies them for doing a high-grade and high-class work. This is apparent in the work that the nurses are doing in Virginia and everywhere else, where they function as Public School Nurses, Public Health Nurses, Community Nurses and other types of Nurses that require intelligent stability of character, high motives and devotion to duty. They have been brought up to a high plane and are well qualified for the work that they undertake. Consider the County Nurse who works in fields where doctors are scarce and getting scarcer. What a wonderful amount of good she can do and what a high type of woman is required for this work. It is in the nurses' third year that she has the opportunity to qualify herself for filling such positions as have been mentioned and there is a question as to whether or not the third year should not be elective so that the nurse could choose that department in which she would prefer to work. It is in the third year also

that they receive the experience that fits them for filling institutional positions, as for instance, operating room, administrative work on the floors, etc. It is very necessary that we should train nurses that in their turn can train others and we cannot do this by lowering the standard. I do not believe that at the present time any hospital is making a profit on its nurses, although I have heard this statement made. I believe that the proper thing to do is for the President to appoint a committee to confer with the nurses in reference to the points suggested in this paper and any other point affecting the education of nurses because I do not believe that doctors should take any action until they confer with those who have this important subject in charge. I appreciate the interest of the Medical Society but beg that no final action be taken now.

Dr. Wm. J. Mayo, Rochester, Minn.: Doctor Hodges' paper brings up a subject that is fresh in the minds of all of us. There is a shortage of nurses. Only the rich and charity patients can be said to have proper nursing care. Are we to permit the great middle class of our country to be denied the services of the nurses? A nurse is not a luxury. She is a necessity. The attempt to force a three-year curriculum as a minimum, in schools of nursing, limits the number of nurses because not a large number of young women can afford the time required. I am yet to be convinced that the three years' nursing course is either necessary or wise for the average nurse. I do not desire, in saying this, to establish a maximum, but I do consider a two-year course a reasonable minimum. Those who so desire could then take three or four, or even five-year courses which would develop them along special lines. There are schools for nurses equipped to give adequate three-year courses and with these there should be no interference. All young women desiring to enter such schools should be encouraged to do so—the more the better. Frequently nurses have said to me, "Doctor, you are trying to elevate the standard of your profession all the time; why should not nurses do the same?" I have answered that nursing is not a profession, but a vocation. I do not know of any people who, on account of poverty, are compelled to do without medical attention. It must, indeed, stand to the credit of the medical profession that they have taken care of all classes without regard to finances. This is not true of the trained nurse, neither can it ever be. Doctor Hodges has suggested a reasonable remedy and I greatly favor his idea of a pre-nursing high school course, which would shorten the time of training in the hospital to two years.

Dr. W. E. Anderson, Farmville: I enjoyed the paper of Dr. Hodges. He thinks well and expresses his conclusions forcefully as usual. The profession of trained nursing has come to be a very important one; the personnel of the nurses, particularly in this section, is exceptionally good. Most of them are nurses with a broad view of relieving suffering humanity but, like the doctors and preachers, they must get sufficient compensation for proper support. We would have more of these faithful and efficient workers, except for the fact that the training course in my judgment is too long, and, in the first year of training, they have been put through too much drudgery. In some places, as you may know, they have been required to scour floors and do similar work. This first year had better be spent in Educational Equipment, for instance, completing a high school course, in case that has not been done, or further education accomplished. Give the High

School Graduate two or three years, probably the latter would be better, proper practical and professional training, and, if you are working on fit material, you should have a well equipped nurse.

Many of our best nurses show lack of preliminary education. It is necessary for a nurse to be intelligent and adaptable. In other words, she should be able to use the initiative if the occasion demands it. There is far more for her to do than take temperature, use sponge bath, or give a hypodermic.

The scarcity of nurses in small towns and rural districts especially is much to be regretted. I believe the above mentioned conditions are largely responsible for it.

INTERPRETATION OF LABORATORY RESULTS.*

By AUBREY H. STRAUS, B. S., Richmond, Va.
Bacteriologist, State Board of Health.

To be able to discover definitely and promptly the presence of a disease is to take the first step toward the prevention of its communication; and, as a consequence, a public health laboratory is primarily maintained for diagnostic purposes in relation to communicable diseases.

The main difficulty with which the laboratory has to contend is the relative unimportance that must attach to certain negative findings. The presence of disease, if attested by laboratory findings, may be generally taken as ascertained; the absence of disease, as shown by laboratory tests, is by no means as sure. That is not only a difficulty for us; but it is a source of frequent misunderstandings between the laboratory and the practicing physician. If in this paper I am able to make this clear, I shall feel amply rewarded.

I would not have you gather from anything that I shall say that negative laboratory tests should be disregarded or that the doubt that sometimes remains after positive tests should be taken too seriously; but I would not have you place too great store on such findings. Sufficiently repeated they may be taken as proof; but there are so many ways for errors to creep in, and there are so many opportunities, especially in diphtheria cultures, for the inadequate taking of specimens that conclusions should not be reached until evidence is repeated sufficiently.

At the outset it will be clear to the physician that the laboratory has no extraneous guides to its conclusions. Its director receives a specimen knowing nothing of its source. His business is to establish the pres-

ence or absence of a known disease producing germ or serum reaction. If he establishes the presence, all is well. If he fails at once to locate such a germ he is strongly inclined to the belief that no such disease is present; but it is a belief and not definite knowledge.

That is what the physician will have to realize if he would get complete satisfaction out of his relations with the State Laboratory. Positive findings may generally be taken as establishing facts; negative findings must be regarded merely as helpful but not as final. In other words, laboratory reports are subject to interpretation; and the physician who properly interprets them is one who will most benefit by the work of the public health laboratory.

To make this clear, I shall illustrate with facts relating to several varieties of tests that are being constantly made by the State's laboratory; and I think that these will suffice to show my meaning far better than a volume of abstract argument possibly could.

There is, perhaps, more interest at present in the interpretation of Wassermann reports than any one thing that we do. In this test the difficulties of interpretation begin in the laboratory. A clear-cut positive or negative test may be readily read by anyone. Unfortunately, however, many tests are not clear-cut and there are shades of difference which require considerable experience in their interpretation. In an endeavor to avoid errors from this source, we now report all Wassermans, that come in between, as doubtful; the "3+" test we report as "doubtful positive" and the "2+" test as "doubtful negative". In either case the doctor receiving such a report should send another specimen and be guided by the clinical symptoms. It is a well established fact that a single negative Wassermann test should not be interpreted as excluding the possibility of syphilis. Furthermore, a falsely positive test may occur in certain rare conditions, though these false positives occur much less frequently than was formerly thought to be the case. While I believe that a positive Wassermann test nearly always means syphilis, yet, I have always felt that a single positive test should not be considered as final unless borne out by the clinical symptoms.

It sometimes happens that two laboratories making Wassermann tests will disagree in their results but, until a standard method is

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

developed and becomes generally adopted, I know of no means of avoiding such differences. One of the most serious differences is the antigen used. We use what is known as the "cholesterinized antigen", considered by many to be the best antigen, and considered by many others to be entirely too delicate for general use. Many laboratories test each serum with several antigens checking one against the other. This doubles the work, however, and would be impracticable with our present force, besides which I am not convinced of the necessity of this procedure, as there is much to be said in favor of a single antigen carefully controlled.

In justification of the cholesterinized antigen *Dr. W. A. Hinton, of the State Wassermann Laboratory of Massachusetts, reports the examination of 3,701 students in the U. S. aviation school with only 0.56 per cent. positive reactions and 0.5 per cent. doubtful. In our own laboratory, 158 boys in the State reform school were examined with only a single positive reaction and none doubtful. Were this type of antigen as oversensitive as is sometimes claimed, such results could not be obtained.

To sum up, the general practitioner should use the Wassermann test as an aid but not consider it a complete diagnosis in itself. Where such a test differs from the clinical history, by all means confirm by further specimens.

Probably the test that has caused us most concern in all our work has been the Widal test. We sometimes have physicians write us that patients with clinical cases of typhoid fever do not give a positive Widal reaction. We are not surprised at this as we place but little value on the negative Widal when carried out with a dried drop of blood. We have for the last two years tried to discourage in every way the submitting of the dried drop of blood for the Widal test. As soon as public opinion among the physicians of the State will permit, we shall discontinue this test entirely. In its place we shall substitute the blood culture and the microscopic Widal test which are already increasing in popularity. These two tests make a very valuable combination where specimens are properly submitted and the results are properly interpreted.

The interpretation of these tests, however,

is again important. A positive blood culture is, of course, absolutely conclusive. There can be no doubt whatsoever when the typhoid bacillus is actually isolated from the blood. A negative finding, however, varies in its significance according to the stage of the disease. If the disease is in its first ten days, a negative blood culture report is nearly always conclusive. If, on the other hand, the case has been running for several weeks, then a negative blood culture has much less significance. The agglutination or Widal test works in the opposite way. In the first week of the disease, this test is usually negative while, as the disease progresses, the agglutinins become more and more prominent in the blood. These two tests, therefore, when used together form a very reliable combination and furnish a more accurate laboratory diagnosis than we are able to make in most diseases. There is a certain period during which both of these tests are apt to be positive and I believe that a case of true typhoid fever giving negative results by both of these methods almost never occurs.

Occasionally, these examinations do not suffice. In young children it is often difficult to get blood for a culture. Then again a case may be too advanced for a blood culture and also recently vaccinated which would make the value of the Widal doubtful. In cases such as these, stool examinations are of decided diagnostic value.

Even in a disease such as diphtheria it is unsafe to place too much dependence on a single swab. A great many things can happen to lessen the diagnostic value of such a swab. Doctors do not always get the diphtheria organisms on a swab, even though they are present in the throat at the time. The best proof of this is when release cultures are examined. I have seen cases alternate from positive to negative over a period of several weeks, and it is not reasonable to suppose that the diphtheria bacillus should be in the throat one day and absent the next. It occurs quite frequently that a negative diagnosis is followed by a positive culture and *vice versa*.

Certain things can also occur in the laboratory to give these results. Throat bacteria of various kinds will overgrow and thereby conceal the diphtheria bacilli and, even though the report is negative, the bacilli may have been present on the swab submitted. A positive diphtheria culture practically always

*Am. Jour. of Syphilis, Vol. 5, No. 1.

means diphtheria. However, such a diagnosis depends upon the judgment of the individual worker and even the most experienced at times may make mistakes.

The character of the diphtheritic infection is also an important factor, as negative results are often obtained from typical laryngeal and nasal cases. Negative cultures from cases of these types, therefore, have only a limited significance.

In tuberculosis, a positive sputum examination is always considered conclusive. However, a negative examination does not necessarily mean absence of the disease. We recently found tubercle bacilli in a specimen where six previous examinations over a period of four weeks were negative. This illustrates the danger of placing too much value on a single negative specimen.

Whatever the shortcomings of the laboratory may be, it has now assumed a position of first importance in the diagnosis of many communicable diseases. Nevertheless, a closer co-operation between the laboratory and the physician will make the laboratory much more valuable to the physician than it is at present. The real purpose of this paper is an endeavor to bring your laboratory closer to you and to present an opportunity for the discussion of our mutual problems.

SOME PHASES OF PITUITARY DISEASE WITH REPORT OF ILLUSTRATIVE CASES.*

By J. D. WILLIS, M. D., Roanoke, Va.

Perhaps the first experimental demonstration of an internal secretion was by Berthold in 1849. This was the transplantation of the cock's testis. Later, in the year 1855, Bernard, by his classical investigations on hepatic function, showed the presence of an internal secretion (glycogen), in addition to the known external secretion (bile). In the same year Addison's monograph appeared attributing a definite clinical syndrome to a destructive disease process of the suprarenal capsules. Graves and Basedow, prior to Bernard and Addison, had described a malady which, at a later time, was proven to be one of disturbed internal secretion, viz.: hyperthyroidism or exophthalmic goitre. After the establishment

of the relation of glands of internal secretion to disease, Brown-Sequard introduced the idea of organotherapy in the year 1869. The way was thus prepared for the concerted action of experimentalists, pathologists, and clinicians, and as a result of their studies we have our present day knowledge of disorders of the glands of internal secretion.

Modern studies have proven that certain glands, the so-called glands of internal secretion, or endocrine glands, produce substances that are of great importance for the proper function of other organs distant from them. These substances are carried from the manufacturing glands by way of the blood to the organs that they act upon; they have been called by Starling "chemical messengers or hormones". In the study of the endocrine glands we have come to recognize definite syndromes that appear to be due to hyperfunction, hypofunction, and dysfunction. These syndromes, however, exhibit manifold variations according to the gland or glands involved. Normally, these glands act in harmony, one with the other, to form a united system, which is called the hormonopoeitic system. Each human being has this system developed for its own needs in health. The disturbance of function of one endocrine gland sooner or later will disturb the function of other endocrine glands. This is brought about by the action of hormones either on the organs themselves, or by their action through the vegetative or autonomic nervous systems.

It will be my purpose to consider in this paper some phases of pituitary disease and to present illustrative cases which show evidence that the pituitary disturbance is the chief cause for complaint.

The pituitary body is a small oval structure, weighing five to ten grains, lying in the sella turcica. It is connected with the brain by a stalk, the infundibulum, which pierces the dura covering and ends at the floor of the third ventricle. The gland is composed of a larger anterior portion, a small posterior portion and the so-called pars intermedia of Herring. The anterior part is derived embryologically from the pharynx, consists of columns of epithelial cells, and is very vascular. Its internal secretion is most likely a colloid substance which passes into the blood stream. The posterior part is derived from a downward process of the midbrain and consists of neuroglia with-

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

out nerve cells. It contains a colloid substance which comes from the epithelial cells of the pars intermedia and is most likely its internal secretion.

The hypophysis has been proven by Paul-escio and Cushing to be essential to life.

Evidence at present favors the view that growth disturbances, genital infantilism, and temperature anomalies are due to loss of function of the anterior lobe, and that obesity, increased carbohydrate tolerance, polyuria, and arterial hypotension depend upon loss of function of the posterior lobe and pars intermedia.

The syndrome developing as a result of over-function of the anterior lobe of hypophysis is known as acromegaly. This disease is a slow, progressive process beginning usually in the early twenties, and one so affected may live for many years, often as long as fifty years after the onset. In some cases, however, death will result as early as three or four years after the discovery of the condition. Women are more often affected than men. It seems to run in families. Usually, the first noted changes are enlargement of the hands, face and feet. It may be noticed that larger gloves, hats, or shoes may be required. Sleeplessness and apathy may be complained of. In some instances there are epileptiform convulsions. Genital disturbances are quite frequently observed early. In females, amenorrhea or other menstrual irregularities are met with; in males, diminished libido and potentia.

The manifestations just mentioned may gradually increase over a prolonged period prior to development of noticeable skeletal changes. In a well developed case of this disease there are hypertrophic changes in the bones and skin, the bones of the face being most frequently involved. The face becomes elongated. The bony prominences are markedly exaggerated. The nose and lips are enlarged. The chin is characteristic, being markedly projected, thickened and turned upward. The lower jaw teeth are shoved forward in front of the upper ones. The teeth remain the same size as formerly but, owing to the overgrowth of the jaw bone, the teeth become considerably separated. The ears are enlarged. The eyebrows, beard, and hair are heavy and coarse. The tongue is enlarged, oftentimes so much as to make speech and mastication difficult. The external genitalia are usually increased in size in both sexes. A

bitemporal hemianopsia quite frequently is present and, when so, it is very helpful in diagnosis because it points to a lesion of the middle part of the optic chiasm, such a lesion being most often due to hypophyseal tumor. Optic atrophy and choked disc, when diffuse, are due to increased intracranial pressure.

Diabetes mellitus occurs in association with, or as a result of, this disease in thirty to fifty per cent. of the cases. The sella turcica in acromegaly is shown by the X-ray usually as enlarged. Most acromegaly cases are much taller than normal, and half of all giants have been recognized as acromegalic. It is quite probable that giantism is due to hyperpituitarism in childhood, and acromegaly without giantism is due to hyperpituitarism appearing after youth. Various bodily influences may stimulate the pituitary into over-activity, and it is probably just as frequent as hyperthyroidism.

The syndrome resulting from hypopituitarism is described as dystrophy adiposo genitalis. It results from a tumor or other disease of the hypophysis, which brings about a decrease of the function of the gland, and especially its posterior lobe. In typical cases the condition is one of obesity and genital atrophy. The increase in body weight may be enormous. When the disease occurs in the young, the hairs of the axilla and mons Veneris are scanty or absent, and the genitalia remain infantile. If the disease develops after puberty the secondary sex features may undergo retrogressive changes. In cases that develop prior to puberty the skeleton in males assumes the feminine type. Diabetes insipidus is frequently associated with hypopituitarism. If the hypopituitarism be a result of tumor formation, in addition to the foregoing states, there will be symptoms of increased cerebral pressure due to the tumor formation.

Hypofunction of the posterior lobe may follow or be associated with hyperfunction of the anterior lobe. Hyper-, hypo-, and dysfunction may be of short duration and often recurrence, and symptoms may be from hypophyseal influence on other of the endocrine glands.

Dyspituitarism has been designated to signify cases which present evidence of disordered pituitary function without being of the outspoken types of over- or underfunction of the gland. Most of these cases occur during mid-

middle adult life, twenty-five to forty-five years of age, but cases in younger people are not uncommon.

Neighborhood symptoms due to pressure include all those common to states of hyper- and hypofunction, such as primary optic atrophy, bitemporal hemianopsia, bitemporal headache, enlargement of sella turcica, etc. Primary optic atrophy and bitemporal hemianopsia result from direct pressure on the optic nerve. Bitemporal headache is due to distention of the dural covering of the gland and may be most severe. Sometimes the headache may be of the occipital or frontal type, and even general in character.

There may be any degree of overdevelopment due to hyperfunction which may have occurred at any previous age and is now stationary. This overgrowth may be in the form of a mild degree of enlargement of hands, feet and facial features. There may be certain psychic disturbances, such as irritability, lack of concentration, wakefulness, mild psychoses and psychasthenias. Epileptiform seizures due to pituitary disturbance rarely occur except in a state of hyperfunction. Drowsiness, adiposity, amenorrhea, loss of libido, and frigidity are frequently present in dyspituitarism.

I have presented the syndromes in which the pituitary gland is primarily or predominantly diseased. There is a group of cases in which several of the endocrine glands are involved at the same time. Clinical pictures present considerable variation, depending upon the disturbance of the several glands involved. The syndromes are spoken of as multiglandular. Symptoms suggesting polyglandular involvement are: rather sudden increase in weight, associated at the same time with asthenia, nervousness and indifference; headache, dizziness, disturbance of vision, drying and pigmentation of the skin, insomnia, tremor of the hands, epistaxis, falling of hair, amenorrhea, polyuria, vasomotor disturbances, and loss of libido and potentia. A state of low blood pressure may also exist, and many other symptoms may occur in polyglandular disease.

CASE 1. "B. E. T." A boy of 14. Height 5 feet 1 inch. Weight 80 pounds. Had the mentality of a child of 7 years. Very nervous and easily excited. Eyes stary. Chin very pointed. Arms and legs abnormally

long, hands enlarged, and the gonads had the development of an average man of 30 years. He was not virile and had no growth of pubic hair. Eye examination (Dr. Maxwell): "Vis-



CASE No. I.

Note stary expression, lengthy development of arms, enlargement of hands, and overdevelopment of gonads, with absence of pubic hair.

ion 20/50, each eye. Compound hyperopic astigmatism in each eye. Pupillary reactions normal. Median fundus clear. Visual fields normal for objects." Blood pressure: S. 95. D. 60. Blood Wassermann negative. On studying the print from the radiographic plate of the sella turcica you will notice the hypertrophy of the anterior and posterior clinoids, which almost obliterate the sella space.

Clinical Diagnosis.—Hyperpituitarism (anterior lobe); Hypopituitarism (posterior lobe).

Treatment.—Glandular feeding of whole pituitary gland, 8 grains a day for 4 months. Unimproved.



CASE No. I.

Hypertrophy of the anterior and posterior clinoids, which almost obliterate the sella space.

Clinical Diagnosis—Hyperpituitarism (anterior lobe); Hypopituitarism (posterior lobe).

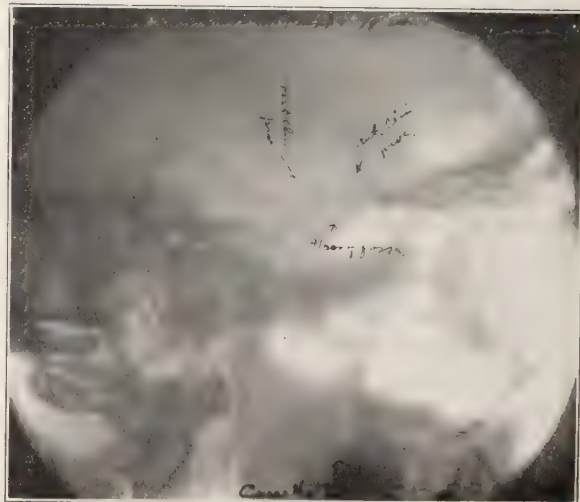
CASE 2. "F. C. P." Age 49. Married. Farmer. Height, 6 feet 1 inch. Weight, 180. Facial express is typically acromegalic. Hands and feet very large and arms and legs of unusual length. One year prior to examination he developed polyuria and a mild degree of asthenia. These complaints continued to trouble this man in an increasing degree. For the 4 months before examination the following symptoms were prominent: severe constipation, shortness of breath on slight exertion, progressive weakness, swelling of ankles and feet, frequent urination, and impotence. During the 2 weeks preceding examination he vomited on an average of once in each 24 hours. Blood pressure: S. 160, D. 100, Blood Wassermann negative.

Twenty-four-hour urine elimination averaged 18,000 cc. with a specific gravity of 1004. The phenolphthalein return could not be estimated on account of the great dilution. Blood urea 56.3 mg. per 100 cc.; uric acid 3.33 mg. per 100 cc.; creatinine 2.81 mg. per 100 cc. On study of print from radiographic plate of sella turcica you will notice an overdevelop-



CASE No. II.

Note the bony overgrowth and clubbing of the metacarpals and phalanges.



CASE No. II.

Overdevelopment of anterior and posterior clinoids with very shallow sella space.

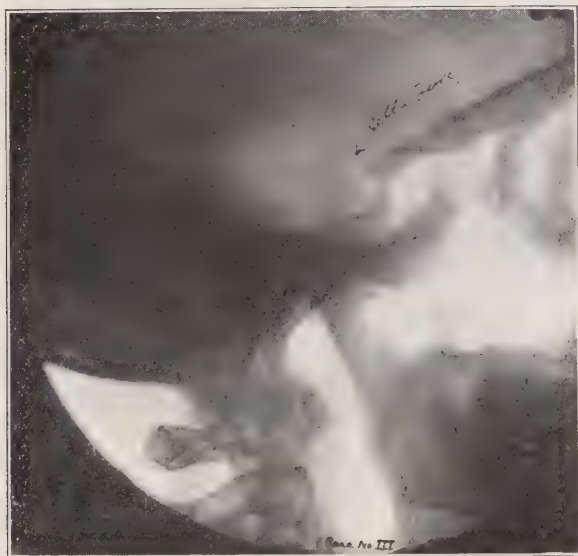
Clinical Diagnosis—Acromegaly (Hyperpituitarism—anterior lobe); Diabetes insipidus (Hypopituitarism—posterior lobe).

ment of the anterior and posterior clinoid processes, with a very shallow sella space. You will also notice from the print of the hands the bony overgrowth and clubbing of the metacarpals and phalanges.

Clinical Diagnosis.—Acromegaly (Hypopituitarism, anterior lobe); diabetes insipidus (Hypopituitarism, post lobe).

Treatment.—Glandular feeding of whole pituitary gland 12 grains a day, over a period of 6 months brought about general improvement and a marked reduction of the polyuria. Patient died 1 year later.

CASE 3. "J. E. G." Age, 42. Married. Railroad switchman. Stout build. Height, 5 feet 8 inches. Weight, 175. For 18 months he had been losing weight and had lost 25 pounds in the 6 months prior to examination. For this period he had suffered continuously with bitemporal headache. Sudden movement of the head caused dizziness. He was very nervous. Between 7 p. m. and 7 a. m. he eliminated an average of 2,000 cc. of urine with a specific gravity of 1005. Blood pres-



CASE No. III.

Abnormally large sella space.

Clinical Diagnosis—Pituitary headache; Diabetes insipidus (Hypopituitarism—posterior lobe).

Pathological Diagnosis—Adenoma.

sure, S. 140, D. 75. Blood Wassermann negative. The print from radiograph of sella turcica shows an abnormally large sella space. The size of this space suggests an overgrowth of the pituitary body. (I regret the inability to secure eye tests in this case.)

Clinical Diagnosis.—Pituitary headache;

diabetes insipidus (Hypopituitarism, posterior lobe).

Pathological Diagnosis.—Adenoma.

Treatment.—This patient's physician has advised me that he was unable to get this man to take treatment. Unimproved.

CASE 4. "H. E. J." Age, 39. Married. Medium build. Was definitely under weight, and had a very sallow complexion. He had suffered a great deal with headache and had had attacks of indigestion for the past 13 years. Eleven months before examination he developed polyuria which lasted for a period of 6 months. During this attack he frequently voided 5,000 cc. in 24 hours. For the following 5 months he was not troubled with polyuria and gained in weight and strength. The polyuria, at the time of examination, had returned. He was weak and nervous and complained of severe headache of the combined



CASE No. IV.

Irregular enlargement of sella space, presenting an excavated appearance. Clinoids absorbed.

Clinical Diagnosis—Pituitary headache; Diabetes insipidus (recurrent). (Hypopituitarism—posterior lobe).

frontal and bitemporal types. He was voiding 6,000 cc. in 24 hours with a specific gravity of 1002. Weight, 150, had lost 12 pounds in a month. He complained very much of dizziness and indigestion which was characterized by a dull ache, sour stomach and bloating. Blood pressure, S. 98, D. 55. Blood Wassermann negative. Radiogram of sella turcica shows an irregular enlargement of sella space, presenting an excavated appearance—clinoids absorbed.

Clinical Diagnosis. Pituitary headache; diabetes insipidus (recurrent) (Hypopituitarism—posterior lobe).

Pathological Diagnosis.—Adenoma.

Treatment.—Glandular feeding of whole pituitary gland 12 grains a day, together with tonic pill of iron and arsenic. Headache was entirely relieved by the second day after starting glandular feeding. At the end of 2 months the glandular feeding was discontinued for 1 week with a return of headache. On starting feeding again the headache was entirely relieved. After 4 months of feeding patient had regained his former weight and felt quite strong. He was not nervous. Digestive disturbance was entirely relieved. Twenty-four hour output of urine reduced to 3,000 cc. with a specific gravity of 1015. It has been necessary for this patient to continue glandular feeding until the present time—one year later. When he discontinues the feeding the headache and polyuria return.

CASE 5. "M. D. T." Age, 21. Single. Medium build, slender type. Does not look sick. For 6 weeks he had complained of constant headache of the combined bitemporal

third. Anterior clinoids absorbed. Frontal sinuses enlarged.

Clinical Diagnosis.—Pituitary headache.

Pathological Diagnosis.—Adenoma.

Treatment.—Glandular feeding with whole pituitary gland 8 grains per day. The headache was very much relieved within 24 hours after starting the feeding, and by the end of the third day was entirely relieved. Glandular feeding was discontinued for 1 week at the end of 1 month and the headache reappeared. Entire relief was gotten by again instituting glandular feeding. Headache has not returned 1 year later. He is continuing the feeding at intervals.

CASE 6. "Miss G. H." Age, 30. A well developed woman of medium build. Does not look sick. For 4 years she had complained of constant frontal headache and at times a very severe bitemporal headache. Beginning 8 years ago, for a period of 2 years, she had a persistent polyuria and was especially weak

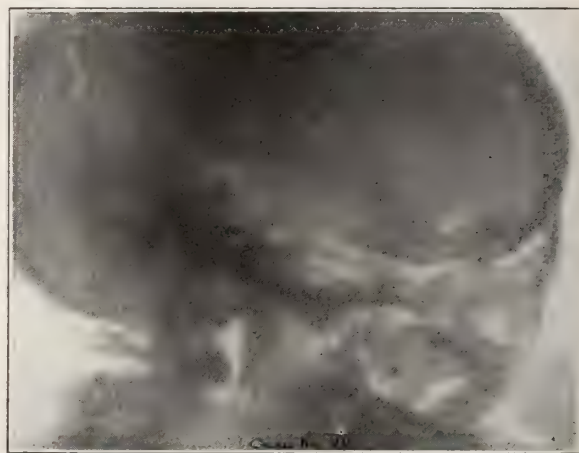


CASE No. V.

Elongation and thinning of posterior clinoids which extend upward and forward in a semi-circular fashion, narrowing the inlet to sella space by one-third. Anterior clinoids absorbed. Frontal sinuses enlarged.

Clinical Diagnosis.—Pituitary headache.
Pathological Diagnosis.—Adenoma.

and frontal types. This headache was very severe and had failed to respond to vigorous purgation. He had lost 18 pounds in weight during this period. Blood pressure: S. 120, D. 60. Blood Wassermann negative. Radiogram of sella turcica shows elongation and thinning of posterior clinoids. They extend upward and forward in a semi-circular fashion, narrowing the inlet to sella space by one-



CASE No. VI.

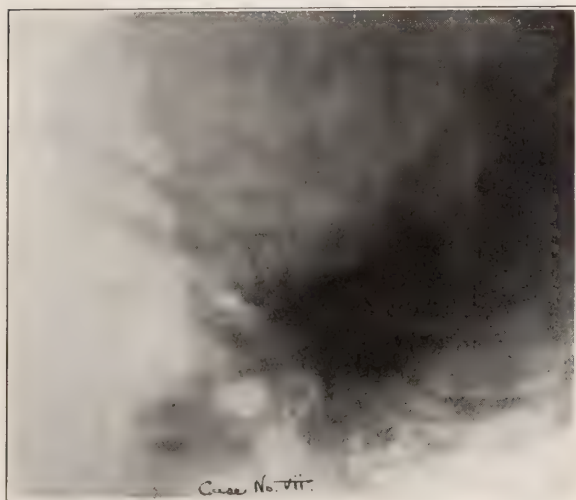
Anterior and posterior clinoids bridged over in a semi-elliptic fashion, giving the sella space the appearance of an oval body surrounded by a ring of bone.
Clinical Diagnosis.—Pituitary headache; diabetes insipidus, non-active (Hypopituitarism—posterior lobe).

throughout this period. She states that she voided as much as 8,000 cc. in 24 hours. Weight, 135. Blood pressure, S. 120, D. 70. Blood Wassermann negative. Eye examination (Dr. Maxwell) shows slight hyperemia of both retinæ. Radiogram of sella turcica shows a bridging over of anterior to posterior clinoids in a semi-elliptic fashion. The bridging of the clinoids gives the sella space the appearance of an oval body surrounded by a ring of bone.

Clinical Diagnosis.—Pituitary headache; diabetes insipidus, non-active (Hypopituitarism—posterior lobe).

Treatment.—Glandular feeding was kept up in this case for 6 months, starting in with 6 grains of whole pituitary gland a day and gradually increasing to 16 grains, without relief of headache. Spinal drainage done 3 months ago gave complete relief.

CASE 7. "Mrs. J. W. W." Age, 29. A well developed woman who does not look sick. Married for 12 years. No pregnancies. Since 18 years of age she had suffered with attacks of sick headache. The attacks, prior to 1 year ago, occurred usually about the time of the menstrual period. For the year prior to examination these attacks had come more fre-



CASE No. VII.

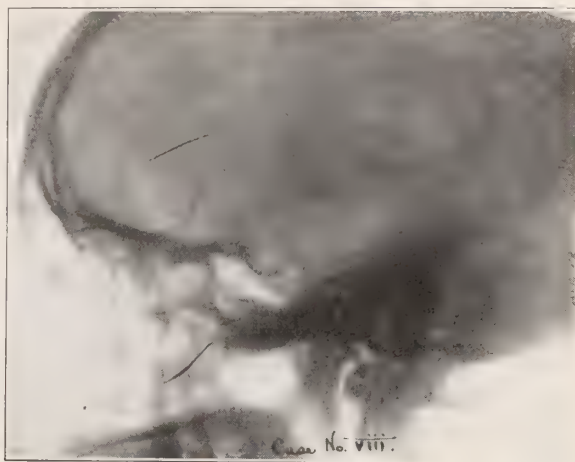
Slight deepening of sella space and apparent absorption of clinoids.

Clinical Diagnosis—Dyspituitarism; ovarian dysfunction.

quently. During the 3 weeks before examination she had had an attack weekly. During the attacks, which lasted from 1 to 2 days, she vomited everything taken on the stomach. She did not have headache in the interval between attacks. The headache was described as a feeling of compression over the entire scalp. She suffered with dysmenorrhea prior to 3 years ago. At this time she had a cervical dilatation done and since menstruation has been without undue pain. Blood pressure, S. 130, D. 90. Blood Wassermann negative. Radiogram of sella turcica shows slight deepening of the sella space and apparent absorption of clinoids.

Clinical Diagnosis.—Dyspituitarism; ovarian dysfunction.

Treatment.—Glandular feeding of whole pituitary gland 6 grains and corpus lutein 20 grains a day. This patient continued treatment for 3 months and has had no recurrence of attacks 1 year later. She has gained 15 pounds.



CASE No. VIII.

Overgrowth of anterior and posterior clinoids with exostoses of posterior clinoids. Anterior and posterior clinoids almost in apposition. Frontal sinuses enlarged.

Clinical Diagnosis Pituitary headache.

CASE 8. "E. B." Age, 25. Married. Height 5 feet 6 inches. Weight, 130. Had suffered with headache at intervals for 5 years. For 8 months prior to examination the headache had been constant, very severe, and of the combined frontal and bitemporal types. He had lost 10 pounds during this period. He had scrofula as a child. Eye examination (Dr. Maxwell): "Vision 20/60, each eye: corrected to 20/30. Median fundus normal except for slight hyperemia of the retinae." Blood pressure, S. 120, D. 70. Blood and spinal fluid Wassermann negative. Spinal fluid tension not increased. Cell count normal. Radiogram of sella turcica shows overgrowth of anterior and posterior clinoids with exostoses of posterior clinoids. Anterior and posterior clinoids almost in apposition. Frontal sinuses enlarged.

Clinical Diagnosis.—Pituitary headache.

Treatment.—Glandular feeding of whole pituitary gland, 2 grains 3 times daily, was started but it intensified the headache to such an extent that it had to be discontinued. It is interesting to note that a single 2-grain dose of pituitary whole gland would precipi-

tate the most violent headache within 15 minutes. Spinal drainage gave complete relief and patient gained 10 pounds within a month.

CASE 9. "Miss E. V." School teacher. Age, 28. Slender; had never been robust. Weight, 102. Three years prior to examination she had a nervous breakdown and had not felt perfectly well since. For the 4 months before examination she had felt very stupid and sleepy. It was difficult to keep awake during



CASE No. IX.

Elongation of anterior, and roughening of posterior, clinoids. Irregular thickening of cranium, with slight enlargement of sinuses.

Clinical Diagnosis—Dyspituitarism.

the day and whenever she relaxed for rest would immediately go to sleep. She had lost 8 pounds. For 5 or 6 months she had suffered a great deal with dysmenorrhea and for 3 days preceding each menstrual period suffered greatly with occipital headache. Blood pressure, S. 100, D. 70. Blood Wassermann negative. Radiogram of sella turcica shows elongation of anterior clinoids and roughening of posterior clinoids. Radiogram of skull shows irregular thickening of cranium with slight enlargement of frontal sinuses.

Clinical Diagnosis.—Dyspituitarism.

Treatment.—Glandular feeding, pituitary whole gland, beginning with 6 grains a day and increasing to 8 grains. Patient relieved and treatment discontinued at the end of 2 months. Four months later she was perfectly well and had gained 13 pounds.

CASE 10. "Miss E. P." Age, 23. Stenographer. Small build. Weight 103. Had suffered with headache of the combined frontal and bitemporal types almost continuously for 7 years. Eyes refracted and glasses

changed several times without relief. Blood pressure, S. 115, D. 70. Blood Wassermann negative. Radiogram of sella turcica shows



CASE No. X.

Elongation of anterior and posterior clinoids which are almost in apposition. Enlargement of frontal sinuses. Clinical Diagnosis—Pituitary headache.

elongation of anterior and posterior clinoids which are almost in apposition. Frontal sinuses enlarged.

Clinical Diagnosis.—Pituitary headache.

Treatment.—Glandular feeding of whole pituitary gland 8 grains a day. Headache was entirely relieved by the 3rd day. Treatment discontinued after 1 month. There had been no recurrence of headache 6 months later and patient had gained 5 pounds.

SUMMARY.

These cases were selected for report because they point to disturbances of the pituitary gland as being responsible for the predominant complaints of the patient, the diagnoses being supported by radiograms of the sellae turcicae which show anatomical variations from normal. Some of these cases are unquestionably of mixed type. I doubt exceedingly if we ever see a predominant pituitary disorder that is not a mixed type, unless it be acromegaly. Carbohydrate studies in this series of cases would have been of interest but not essential to diagnosis. I regret that it was not possible to have careful eye examinations made in all of the cases.

Glandular feeding of whole pituitary gland and spinal drainage have been in my hands the most helpful agencies for the relief of pituitary headache. The case reported which showed intensifying of the headache by pitui-

tary feeding has been the only instance of this kind which has come to my attention. In some pituitary tumor cases operation is justifiable in the hands of surgeons of wide experience in this field.

Cushing has recently spoken a timely word of warning against becoming over-enthusiastic in dealing with endocrine disturbances. Commercial exploitation of glandular therapy should be condemned. We should not allow our enthusiasm to carry us beyond the bounds of safe-guarded analysis.

DISCUSSION.

Dr. Tom A. Williams, Washington, D. C.: It is on following up pituitary gland disorders that we really find how much help can be given. For instance:—A girl, aged 11, was seen by me ten years ago because of tics which psychotherapy did not help. She developed mendacity and deceitfulness and later torpidity. She had always been obese with scanty hair. When given pituitary gland in large doses, she quickly recovered. Now, although at the end of six months medication ceased, she continued developing normally, playing basket ball, becoming captain of the first team, making her debut without further trouble.

That such patients after recovery can abstain from pituitary gland is in conformity with the similar discovery regarding adrenal therapy, which appears in my paper "The Syndrome of Adrenal Inadequacy." (J. A. M. A. 1912).

We are not so well informed regarding over-activity, but the example of the West Virginia woman in whom we diagnosed adrenalectomy of the gland is significant. She had become intensely excitable, restless, with insomnia, forgetfulness and had periods of torpidity. Spastic symptoms developed and the visual fields were restricted. The patient was shown before the Medical Society of the District of Columbia, and the case published in the Washington Medical Annals in 1911.

She was treated periodically by X-ray directed through the temporal region towards the sella turcica, which a picture showed to be eroded almost to flatness. At the end of six months the visual fields were normal, spasticity had diminished, and the symptoms had also diminished. A slight relapse at the end of the year was given three treatments, since then she has remained well.

Dr. C. C. Coleman, Richmond: The interpretation of many so-called pituitary conditions must at the present time be largely speculative. There are certain mechanical disturbances arising from pituitary enlargement which may be accurately inferred from the disturbance of the vision. An intrasellar tumor, growing upward and forward, as they frequently do, involving primarily the inner and lower fibres of the optic chiasm, thereby produces an upward and outer defect in the visual fields.

Our knowledge of pituitary dysfunction on the other hand, when not accompanied by mechanical involvement of the visual apparatus, is by no means clear cut, and it is true that a great many of the disturbances of metabolism have been attributed to pituitary disorders, which are in no way connected with pituitary function. When the various theories of pituitary dysfunction are subjected to the critical tests of the known physiology of this gland,

these theories are often proven to be without a rational basis.

I have been interested primarily in the surgical side of pituitary disorders. The chief indication for operation upon this gland arises from impairment of vision, with or without headache. In these cases much can generally be accomplished either by a sellar decompression, or an intracranial operation. It is often difficult to draw accurate conclusions from the X-ray findings in suspected cases. In some cases an enlarged sella, presenting certain characteristics, will often decide the proper method of operative approach. In patients with suspected non-surgical pituitary conditions, the X-ray evidences of a small gland, based on a tendency to bridging over of the sella, must be interpreted with great care, and in correlation with the other clinical features of the case.

It does not seem reasonable always to infer a hypopituitarism because of a small sella, and certainly we cannot say that the secretion of the pituitary is prevented from reaching its destination, because of bridging, provided the infundibulum has not been encroached upon. A small gland may be a very active one, and there may be as many departures from the normal size as may be found with the various features or organs of the body.

The field of endocrinology is a wide one, in which a great deal has been accomplished by those who are weighing carefully the established facts, and investigating scientifically the many theories.

I have enjoyed very much Dr. Willis' paper and the interesting case reports.

Dr. J. D. Willis, Roanoke, closing discussion: I wish to thank the gentlemen for their generous discussion of my paper. My purpose in presenting this paper is to stimulate an interest in the study of pituitary disorders. Relief can be brought to many sufferers by proper appreciation of the subject and instituting appropriate treatment with a full realization of its limitations.

THE CLINICAL MANIFESTATIONS OF SOME PITUITARY DISORDERS.*

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The subject of endocrinology is probably the most prominent problem before the medical profession today. The publications have been so numerous and lengthy that it has been difficult for the general practitioner to wade through and get the ordinary classical syndromes which would be of value to him.

It is the purpose of this paper to give the general clinical manifestations of the most frequent ductless gland disturbances, especially hypophyseal, and to enable one to recognize these cases without long and tedious laboratory examinations.

The ductless gland or endocrine system is composed of the pituitary body, the pineal body, the thyroid, the parathyroids, the su-

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

prarenals, the pancreas, the testicles and ovaries, and probably the thymus and mammary. In recent years there has been a question whether the spleen and the liver belonged to the ductless gland group. It is generally recognized that there is an interrelationship between the glands of internal secretion and the definite synergistic and antagonistic action, if any, of one upon the other has not been conclusively shown clinically or experimentally.

PITUITARY DISORDERS. The writer believes with Tucker¹ and others that the pituitary gland is the "lead horse" or governor of the other glands of the endocrine system. From clinical observations of large series of cases, the larger per cent. of which were polyglandular, the pituitary signs of dysfunction predominated the others and many of these cases regained their secretory balance on simple pituitary feeding, while feeding the gland substance of any one of the other ductless glands, except possibly the thyroid, failed to yield satisfactory results. These observations lead us to believe that in the greater number of instances the pituitary body is paramountly affected and at this time there is not sufficient experimental evidence at hand for us to discard the clinical facts.

Before taking up the specific disorders let us consider briefly the embryological development and the anatomical location of the pituitary body. The fossa in which the hypophysis lies is formed from four cartilaginous outgrowths of mesoblastic origin in Rathke's evaginating mass, the posterior portion forming the dorsum sellae and the anterior portion forming the anterior pituitary fossa. The pituitary body is an ectodermal outgrowth of Rathke's pouch, the infundibulum and an evagination of the mid-ventral wall of the diencephalon, the fusion of which occurs during the second month of embryological life, during the third and fourth months becomes partly enveloped by the cartilaginous pituitary fossa, and "secreting an important internal secretion."²

This gives a clear conception of the development and housing of the hypophysis, it "being the most protected organ in the body"³, an unquestionable evidence of its paramount role.

Histologically, the hypophysis cerebri is divided into an anterior lobe, posterior lobe (pars nervosa), and the infundibulum (pars

intermedia), the latter being considered as a part of the posterior lobe.

Physiologically, the anterior lobe has to do with (a) skeletal growth, (b) function and development of the gonads and secondary sex characteristics, (c) mentality, (d) dermal growth, (e) temperature, (f) pulse and (g) blood pressure; the posterior lobe with (a) regulation of carbohydrate metabolism, (b) contraction of involuntary and unstriated muscle, (c) blood pressure, (d) body temperature, (e) pulse and (f) renal secretion (?).

The following classification of pituitary disorders is the most recent and the conclusions reached in studying a large series of cases which have been thoroughly worked out by Englebach and Tierney⁴:

CLASSIFICATION—DISORDERS OF THE PITUITARY GLAND.

1. Anterior Lobe

A. Hypoactivity

1. Pre-adolescent
 - a. A-neoplastic
 - b. Neoplastic

{ Lorain-Levi Type

2. Post-adolescent
 - a. A-neoplastic
 - b. Neoplastic

{ Amenorrhoea, dysmenorrhoea, metrorrhagia. Reacting to anterior lobe treatment. No signs of posterior lobe disorder.

B. Hyperactivity

1. Pre-adolescent
 - a. A-neoplastic
 - b. Neoplastic

{ Giantism. (No signs of posterior lobe disorder.)

2. Post-adolescent
 - a. A-neoplastic
 - b. Neoplastic

{ Acromegaly. (No signs of posterior lobe disorder.)

2. Posterior Lobe

A. Hypoactivity

1. Pars Intermedia

{ Polyuria (Bab). Reaction to pituitrin. Signs of anterior lobe and Pars Nervosa absent.

2. Pars Nervosa

{ Pituitary Obesity (decreased metabolism, increased sugar tolerance, Polyuria and signs of anterior lobe disorder absent.)

3. Bilobar

A. Anterior and Posterior Lobes

- a. Hypoactivity

{ Froelich's type without or with polyuria.—(Biedl).

b. Hyperactivity	{ Giantism or Acromegaly with increased metabolism and decreased sugar tolerance. Adiposity absent.	I. Metabolism	{ Basal metabolism and sugar tolerance normal or little affected.
c. Heteroactivity		2. Post-adolescent	{ Some undergrowth, short and flat bones being affected.
1. Anterior Lobe			{ Height, normal or slightly tall and relation of measurements variable.
Hyperactive	{ Giantism or Acromegaly with polyuria.		{ Head small or normal.
Posterior Lobe			{ Nose and chin small, pointed.
Hyperactive			{ Sella turcica, small or normal.
2. Anterior Lobe	{ Genital aplasia, nanism, amenorrhoea, etc., with pituitary glycosuria. Increased metabolism; decreased sugar tolerance.	A. Osseous Development	{ Hands somewhat smaller than usual, and fingers slightly tapering, no tufting.
Hypoactive			{ Pelvis broad, feminine type.
Posterior Lobe			{ Genitalia normal.
Hyperactive			{ Menses, tendency to dysmenorrhoea, amenorrhoea or metrorrhagia.

In the hypo states there are some characteristic findings belonging to each portion of the gland and occurring pre- or post-adolescent, which give us a definite working basis.

ANTERIOR LOBE UNDER-SECRETION.

1. Pre-adolescent	{ All bones small and short; upper measurements greater than lower and span less than height.	B. Genitals	{ Secondary sex characteristics and impotence present.
A. Osseous development	{ Head small, nose and chin pointed, sharp. Sella turcica—usually small. Hands small, fingers tapering, no tufting. Pelvis broad, feminine type.	C. Muscular	{ Normal and proportionate. Fatiguability sometimes present.
	{ Genitals infantile. Menses — amenorrhoea, dysmenorrhoea and metrorrhagia. Sterility and impotence present. Secondary sex characteristics absent.	D. Dermal	{ Upper incisors enlarged and may be separated. Body hair, normal.
B. Genitals		E. Temperature	{ Subnormal
C. Muscular	{ Normal proportionate development.	F. Pulse	{ Slow
D. Dermal	{ Teeth—upper incisors enlarged. Body hair absent.	G. Blood pressure	{ Low or normal
E. Temperature	{ Subnormal	H. Mentality	{ Not usually affected.
F. Pulse	{ Slow	I. Metabolism	{ Basal metabolism and sugar tolerance normal or slightly affected.
G. Blood Pressure	{ Normal, sometimes low.		
H. Mentality	{ Retarded or deficient		

POSTERIOR LOBE UNDER-SECRETION

1. Pre- and post-adolescent	{ (1) Basal metabolism, decreased.
	{ (2) Carbohydrate metabolism, increased.
A. Metabolism	{ (3) Blood sugar, low.
	{ (4) Glycosuria and hypoglycemia, absent.

B. Obesity	{	(1) Marked breast girdle padding.
		(2) Marked pelvic girdle padding.
		(3) Moderate or marked mons padding.
C. Polyuria	{	Present except in very mild cases.
D. Polydipsia	{	Present except in very mild cases.
E. Involuntary muscle contraction	{	(1) Intestinal—absent, intestinal atony.
		(2) Uterine—absent.
F. Effect on other Endocrine Glands	{	(1) Thyroid-hypoactivity.
		(2) Adrenals—Insufficiency (?).
		(3) Gonads—Hypoactivity usually accompanied by anterior lobe dysfunction.
		(4) Pancreas—Normal with increased sugar tolerance.
G. Pulse	{	Slow
H. Temperature	{	Subnormal
I. Blood Pressure	{	Usually low.
J. Nervous Status	{	Drowsy, apathetic.

BILOBAR CONDITIONS.—These are combinations in which there is a hypo-secretion of the anterior and posterior lobes occurring pre- or post-adolescent and the two lobes frequently being affected synchronously, while, in some, one or the other lobe predominates. In these cases the roentgenographic findings vary from those in one lobe hypo- and hyper-function. There is a tendency for the clinoid processes to bridge the fossa, this is especially true of the posterior clinoids which may be clubbed or roughened at their tips.⁵ In fact, it is not uncommon to find a fossa of this type to be completely bridged by the clinoid processes. Blood sugar, sugar tolerance, basal metabolism and the pituitrin test, together with the clinical endocrine signs, make the diagnosis fairly easy.

Belonging also to the bilobar group of cases are two types: in one the anterior lobe is hyperactive and the posterior lobe is hypoactive.

in the other the converse is the case, the hormonal signs of each lobe being in evidence.

ANTERIOR LOBE CONDITIONS.

Pituitary amenorrhoea is an anterior lobe disorder of the pre-adolescent type and is frequently associated with syphilis of the hereditary type.⁶ Pituitarism of this type occurs in families with moderate frequency. The patient seldom complains of anything other than amenorrhoea. Clinically, we find virgin breast, total absence or incomplete development of the genitalia, short stature, scant hair, sterility and impotence. The history of unsuccessful attempts to produce menstruation is usually obtained.

Pituitary metrorrhagia is an anterior lobe dysfunction of the post-adolescent variety and is not associated with infectious diseases but has a familial tendency, the women in the family having been of the infantile type. The complaint is that of a long period of menorrhagia followed by an interval of months of amenorrhoea; dull pain in the lower abdomen, sterility, constipation and occasionally headaches, palpitation and emotional upsets. The stature is short and slender, features small, no girdle obesity, spacing of the upper incisors, decreased or absent hair distribution, small pituitary fossa and impotence usually present.

Pituitary dysmenorrhoea is another instance of anterior lobe under secretion of the post-adolescent type and frequently follows the infectious diseases, though we can not definitely attribute them as the causes. The condition usually occurs later after adolescence than the metrorrhasias. The patient complains of painful, scanty menstruation, constipation, abdominal pain, intermittent headaches occurring sometime during the menstrual cycle; is not impotent or sterile. Physical examination shows that the patient is of short stocky stature, features small, hands small, short and have a tendency to be fat, hair distribution normal, pelvic girdle obesity is present with slight general increase in body fat. The amount of undersecretion in this type of case is not as great as in metrorrhagia and amenorrhoea. Feeding with anterior lobe pituitary extract supplanted by ovarian substance gives satisfactory results as a rule.

Genital aplasia without obesity is a pre-adolescent anterior lobe under secretion and is

always accompanied by impotence and sterility; and lack of body hair, feminine type pubic hair, slow pulse, low blood pressure, large spaced upper incisors and backward mentality are usually present.

POSTERIOR LOBE CONDITIONS.

Obesity, pre- or post-adolescent, not associated with genital aplasia, is probably due to hypo-secretion of the posterior lobe. This is characterized by marked breast and pelvic girdle fat, flank and mons padding; the extremities may also be enlarged. High sugar tolerance, low blood sugar and decreased basal metabolism are usually present. Other forms of pituitary obesity can be easily recognized on account of its definite location which is termed "girdle padding" of fat, and most commonly situated at the breast girdle or pelvic girdle, other locations being flank and mons padding. The rarer types are pads occurring on the under surface of the arm and associated with breast girdle fat, and still less frequent is the condition of "elephantiasis" of the lower extremities which may occur in one or both legs. This latter condition of course must be distinguished from other causes of elephantiasis such as lymphangitis, phlebitis, adenitis, hard lymph edema, disappearance of the elastic fibres of the skin and collagenous connective tissue of the hypoderm by the history of the case and clinical findings. We find these types of fat singly or combined to a slight or moderate degree and definitely altering the stature of the individual. The disturbance known as adiposo-dystrophia-genitalis occurs with relative frequency and is readily diagnosed by its characteristic excessive fat all over the locations described above, infantile genitalia, absence of body hair and frequently accompanied by a high pitched voice. This condition is first seen about the eighth year and occurs throughout life, yet less so past middle age.

Pituitary constipation due to atony of the involuntary muscle of the intestinal wall is one of any number of the endocrine symptoms. It responds to the administration of pituitrin 8 to 15 minims hypodermically every other day.

Enuresis, like constipation, is due to atony of the unstriated muscle and responds to the same treatment. The use of the pituitrin may be followed up with the whole gland extract.

Diabetes Insipidus, characterized by poly-

uria, polydipsia, emaciation, and hormonal signs of posterior lobe disorders, has been described by Barker⁷, Englebach and Tierney⁸, and others, as a marked hyposecretion of the posterior lobe. The administration of pituitrin hypodermically has greatly reduced the polyuria and polydipsia in a large percentage of cases. This condition is seldom influenced to any extent by the use of gland extract orally.

BILLOBAR CONDITIONS.

The condition known as adiposo-dystrophia-genitalis, or Froelich's syndrome, has been described under the section of obesity.

Headaches of pituitary origin were first described by Pardee⁹. The location is described by the patient by putting the fingers to the temples. It is not uncommon for the patient to enumerate various sensations as a marble rolling in a cavity, pain back of the eyes, a sense of the eyes pushing forward, or that the top of the head feels as though it may blow off. The headache is deep seated in character and may be severe and of short duration, or dull aching and constant. The absence of nausea and projectile vomiting generally excludes brain tumor; however, tumor of the hypophysis may cause nausea and vomiting. If such be the case, examination of the eye grounds and fields reveals pressure on the optic chiasm. Hyperemia of the gland causing stretching of the capsule and pressure on the gland from the sella turcica have been ascribed as causes. The administration of whole gland extract usually relieves the headache.

Pituitary Epilepsy. Cushing¹⁰ found that some cases of pituitary tumor had convulsive seizures and in 1914 Tucker¹¹ published his first studies in epilepsy, also in 1916 and again in 1919 his further observations. The latter found that "convulsions, in no way clinically distinguishable from those of idiopathic epilepsy, occurred from under secretion of the pituitary gland."

These cases show hormonal signs of pituitary hypoactivity as, alteration in blood sugar, basal metabolism, scant body hair, obesity, over or under growth of the bones and low blood pressure. The roentgenograph of the fossa shows a small or encroached upon sella, massive, bulbous or roughened posterior clinoid processes and bridging may be present. In the greater percentage of cases the convul-

sions begin during adolescence. Response to pituitary gland feeding has been gratifying.

Abdominal pain occurs in a few instances. There are distressing symptoms of pain in the right iliac or hypochondriac region accompanied by nausea, vomiting, headaches, obesity of the girdle type, and scanty regular menses in women. This condition occurs after adolescence, is bilobar in type, response to treatment is not satisfactory and at this time the prognosis is favorable in only about 50 per cent. of the cases; this fact is probably largely due to the late diagnosis¹². Some cases wander from clinic to clinic, have operations for various abdominal conditions, without relief, and are often considered as neurotic individuals.

Pituitary somnolence often accompanies or follows infectious diseases and varies in its degree of intensity. Somnolence of this type is more apparent during the day with intermittent insomnia and restlessness at night. The patient complains of dreams which are pleasant and sometimes associated with brilliant colors. Pituitary somolence responds fairly well to gland feeding. It is important in these cases to have the fundi and fields examined. Three of our cases of encephalitis at autopsy showed involvement of the pituitary gland.

Personality. Does the pituitary gland play a role in the personality of the individual? First, why does the author pick certain types of characters for his novel, the sculptor carve his statues in the real form of his subject, and the play producer choose a large, raw-boned, fearless individual to play the part of the villain?

Tucker¹³ tells me that from his studies an under or an over secretion of the pituitary influences growth and adiposity, and produces various types of stature which in real life have to do with conduct, features and personality. The short fat man is usually good natured and jocular and of a hypopituitary type, while the tall ungainly giant is hyperpituitary. The irregularities of adolescence, the most important transitional stage of life, are evidently influenced by mal-adjustment of this gland. Our knowledge of the relation of this gland is indeed sufficient to stimulate further investigation along this line.

Arterial Hypertension of ductless gland origin has been suggested by Englebach ¹⁴

after the usual organic causes have been excluded. The posterior lobe extract in some cases has reduced the blood pressure considerably, and the anterior lobe has been used to aid in stabilizing it. Other glands have also been found at fault.

CONCLUSIONS.

1. That our present knowledge of endocrinology is sufficient to type out certain definite diseased conditions of ductless gland origin; that it has advanced to the stage where it undoubtedly becomes a branch of medicine; and that it presents wide fields to the thinker and doer clinically and experimentally.

2. These cases present definite clinical manifestations by which we are enabled to make a diagnosis with a moderate degree of surety. While the laboratory examinations are important, the grosser conditions can be recognized with some degree of accuracy without them.

3. The treatment of the endocrine disturbances may be said to be as satisfactory as it is in those of general medicine, and in many instances decidedly more gratifying. At this point the writer feels that he should place a great deal of stress on the fact that good results cannot be expected on short periods of treatment. Response in these cases is slow and treatment must be persistent, sometimes being conducted over months and even as long as several years.

4. The prognosis in a reasonable percentage of hyposecretory conditions is good if thorough study of the case and persistent treatment is carried out.

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HIGH LIGHTS IN THE VENEREAL DISEASE PROBLEM.

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The venereal disease problem is the most intricate and complicated problem in preventive medicine. The difficulties in the way of its solution may be appreciated by a glance at the general program of prevention that has been mapped out. Under this program the activities of a community directed toward combating venereal diseases may be grouped under four heads, as follows:

1. **MEDICAL MEASURES.**—Under the head of medical measures are included all activities concerned with finding and treating cases of venereal disease. This would include the reporting of cases by physicians, the treatment of patients by private physicians or in clinics, the enforced treatment of patients who fail or refuse to seek treatment voluntarily, the social service follow-up to keep patients under treatment, the investigation of cases reported as spreading disease, the laboratory examination of specimens from suspected cases, and such other measures as have for their purpose

the discovery and treatment of patients suffering from venereal diseases.

2. **REPRESSIVE MEASURES.**—Recognizing the fact that the venereal disease problem is incidental to the more fundamental and more important problem of prostitution, an effective community attack upon venereal diseases would also include active and persistent measures for the repression of prostitution in all its forms. Under this heading may be listed all activities concerned with the enforcement of laws against prostitution, the rehabilitation of prostitutes, social service work in connection with the courts for promoting the welfare of individuals accused of sex offences, detective work for discovery of law violations, the maintenance of institutions for the care and reform of persons guilty of sex offences, the mental examination of prostitutes to segregate those requiring permanent custodial care, and such other activities as may have to do with conduct of a character likely to spread venereal disease. Thus it will be seen that while medical measures deal with individual cases of infection as such, repressive measures recognize the moral side of the problem and deal primarily with the question of conduct.

3. **EDUCATIONAL MEASURES.**—Any movement requiring popular support depends primarily upon public recognition of its importance. In order to gain this recognition educational measures are necessary. Such measures in relation to the venereal disease campaign are of two kinds: First, those concerned with the dissemination of information concerning venereal diseases, their ravages and methods of control; and second, those concerned with teaching children the truth about sex and the contribution that sex makes to life with a view to creating proper emotional attitudes toward the sex function as the basis for self-control. This is fundamentally a question of character building, which is recognized as one of the most difficult undertakings within the field of human endeavor.

4. **RECREATIONAL MEASURES.**—The provision of wholesome recreational facilities to attract young people from recreations that may not be so wholesome in character is recognized as a community problem that has a bearing on the venereal disease problem. While its relation to the venereal disease problem may not be so immediate or direct as the relation of some of the other activities enumerated, it is necessary

to consider proper recreational facilities as a part of a complete community program for venereal disease control.

The enumeration of these four lines of activity with a brief statement of their scope is enough to convince anyone that the venereal disease problem is most difficult and complicated in character. Further evidence of the difficulties arising from an attempt at its solution may be furnished by considering more in detail some of the medical aspects of the problem with special reference to treatment and the relation of the physician to the program of prevention.

In the first place the question arises what are the medical features of venereal diseases that afford hope for the success of measures directed toward their prevention? In general, it may be said that the prevention of any communicable disease requires the breaking of some link in the chain of events that results in the transmission of the disease from one person to another. In order that a communicable disease may be transmitted, there must be present the following three conditions:

1. Existence of infected individuals who may be either ill with the disease or carriers.
2. Physical transference of the infective agent from the infected person to another.
3. Susceptibility of the person to whom infection is carried.

Perhaps the simplest and surest method of preventing disease is to remove susceptibility of the person to whom infection may be carried, as is done by vaccination for smallpox, immunization against typhoid fever, the Pasteur treatment for rabies, and now the use of toxin-antitoxin for immunizing against diphtheria. Unfortunately there is no method available for immunizing persons against venereal diseases, and, from what is known concerning the biology of these diseases, it does not appear likely that methods of immunization will be developed—unless some revolutionary discoveries are made in this field.

The next most successful method of preventing the spread of disease is to interpose an obstacle in the route over which infective material passes from one person to another. Some of the measures designed to accomplish this end are the quarantine of infectious patients, the sterilization of discharges from patients, the now almost obsolete wearing of gowns by physicians who attend such patients, washing the

hands after attending patients, sterilizing dishes and clothing used or worn by infective patients, and other measures directed toward preventing the physical transference of infective material to other persons. In its larger aspects this would include such general measures as sewage treatment, water purification and milk pasteurization. In the case of insect-borne diseases, the transference of infective material may be prevented by combating the insect host or carrier. Such diseases as yellow fever, malaria, bubonic plague, and typhus fever are prevented in this manner.

The prevention of venereal diseases by breaking the line of communication is concerned largely with the repression of prostitution. It is true, of course, that in a small percentage of cases transmission is accidental and results from the ordinary contact of daily life. Accidental transmission may be prevented by the exercise of ordinary care on the part of infected persons. In the vast majority of cases, however, the method of transmission is such that breaking the line of communication requires lessened promiscuity in sex relations either by greater individual self-control or by greater vigilance in law enforcement against prostitution. This is not primarily a medical problem, though it is necessary to examine and treat persons affected by law enforcement activities. This requires co-operation between medical and other authorities.

Since one of the links in the chain of transmission of venereal disease is the infectivity of the patient, it is obvious that shortening the period of infectivity will correspondingly lessen the likelihood of transmission. It is in shortening the period of infectivity that the medical treatment of venereal diseases is effective as a preventive measure. In no other field of preventive medicine is the treatment of existing cases so important a factor in preventing the spread of disease to others.

Thus, the physician who treats a case of venereal disease has a double responsibility. First, he is obligated to the patient to give him the best modern treatment for such disease; and second, he has a special responsibility to the community to prevent the spread of disease by shortening the period of infectivity as much as possible and by controlling the conduct of the patient while under treatment or seeing that such conduct is controlled by the health authorities. The physician can fully

discharge these obligations only by such measures as will give his patient the best to be had in the way of modern treatment. If he is not equipped to provide such treatment himself, it is obviously his duty to himself, to the patient and to the public to refer the patient to a physician who is equipped to give modern treatment. No valid excuse exists for failure to make a careful examination by both clinical and laboratory methods for purposes of diagnosis and then to see that proper treatment is administered in accordance with the most modern methods.

It is not possible to place all cases of venereal disease under the care of specialists. Many of them must be treated by general practitioners. Of course, it goes without saying that in attempting to treat any such case the general practitioner should be sure of his ground. Otherwise, he should call a consultant or refer his patient. It is of the highest importance that the patient be not injured by inadequate or insufficient treatment of syphilis or by excessive, rough or inappropriate treatment of gonorrhea. Relapses in syphilis result from inadequate or insufficient treatment. Complications in gonorrhea are frequently the result of improper or ill-advised methods of treatment. The first consideration in the treatment of either syphilis or gonorrhea is to avoid harming the patient and through the patient doing harm to the community by extending instead of limiting the period of infectivity. When it is possible to do so, all chronic or complicated cases should be referred to a specialist.

It is true that under present conditions specialists are not always readily accessible to which venereal patients may be referred. In the larger centers of population, the opportunities for limiting the scope of practice have encouraged the development of specialties so that specialists are available. It is in the rural sections that specialists are hard to reach. This situation affords an opportunity for the organized medical profession, through the county Medical Society, to demonstrate the possibilities of medical service in rural communities and small towns by taking steps directed toward raising the level of medical practice in such localities. Recognizing the necessity for expert knowledge concerning the treatment of venereal diseases in order to provide adequate treatment, and appreciating the difficulty in

obtaining specially trained men for rural work owing to lack of incentive, the County Medical Society may properly undertake the encouragement of partial specialization in the treatment of venereal diseases.

If the specialist studies for two or three years in preparation for the practice of his specialty, the partial specialist for work in rural communities would perhaps wish to spend two or three months in special study as a preparation for emphasizing the venereal disease part of his practice. Of course he could not limit his practice to this line in rural communities but, by his special attention to it and the purchase of a little special equipment, he could become an authority for his community. Thus, in localities where full specialization is not justified, partial specialization may be developed to the advantage of the medical profession at large, the men who partially specialize, and the public.

This proposition then is made to the County Medical Society: that they assume responsibility as a body for providing the best possible treatment for all venereal patients; that in the discharge of this responsibility they select one of their members who is willing to expend the time and money necessary in special study and in the purchase of special equipment to become a partial specialist in the treatment of venereal diseases. The co-operation of the medical profession in this matter would give assurance to one of their number that consultation practice and referred cases would justify the necessary expenditure in time and money to render the better service to the community.

Partial specialization, according to this plan, will provide the medical profession of a community with a consultant for difficult cases, will provide a specially skilled man to whom cases may be referred by those who do not care to treat them, and will permit the medical profession to make good in a larger measure in its field of service to the public and thus gain greater public recognition.

The best method that medical men can employ in combating the various cults, pathies and isms that pretend to proficiency in the healing art is to render the highest possible quality of service and to make the public aware of the service it has rendered. When physicians fail to give relief, the people wander off after strange gods. The development of pretenders

in the practice of the healing art has thus been due largely to the shortcomings of men in the practice of medicine and their failure to recognize the value of special methods of treatment. For this reason the proposal here made is of more than usual importance to the medical profession. The essence of the matter is that there is more reason for socializing the treatment of venereal diseases than any other disease or group of diseases, and it is important that physicians who wish to maintain medical practice on its present basis see to it that the medical profession fully discharge their high responsibility in the treatment of venereal disease.

The future of medicine is in the hands of physicians. By organizing and rendering adequate medical service to the community, physicians can maintain medical practice on its present basis. Failure to render adequate medical service under the present plan of practice affords the strongest argument for state medicine. Furthermore, adequate medical service by medical men is the best known method for combating the evils of counter-prescribing and checking the horde of pretenders who, in the name of some cult or ism, try to supplant the physician in the treatment of disease. The physician is the architect of the fate of medicine. The stones with which he builds for the future of this noble profession are the services he renders mankind. In no part of the field is it more important to use good building material than in the handling of venereal diseases. What is your County Medical Society doing with this problem?

Washington, D. C.

SOME PRACTICAL CONSIDERATIONS IN THE DIAGNOSIS OF THE CONGESTIVE TYPES OF GLAUCOMA.*

By HUNTER H. McGUIRE, M. D., F. A. C. S., Winchester, Va.

My apology in bringing to your attention some phases of the subject of glaucoma, which in themselves may seem quite elementary to many of my friends who have studied its problems during active careers in ophthalmology, is due to an innate desire to emphasize the importance of an early diagnosis on the part of the general practitioner, who, not infrequently, first comes in contact with such cases and upon whose judgment the integrity

of the eye and the ultimate vision of the patient depends.

After twenty-three years' experience in eye work, I am convinced that errors in diagnosis in glaucomatous eyes are responsible for much of the blindness which exists today, and I am likewise confident that the disastrous consequences of this dreaded disease can be prevented, in many instances, by an intelligent study of the cases and a proper interpretation of its symptoms.

I shall not discuss the non-inflammatory form of glaucoma, the so-called glaucoma simplex. Its management, manifestly, comes within the domain of the trained ophthalmologist and its diagnosis is based upon careful ophthalmoscopic examinations, tonometric records, and visual field findings. Unless he is well trained in the method of making such examinations, the general practitioner is not expected to make a proper interpretation of the symptoms of this type of the disease. In passing, however, it might be well to call attention to the fact that simple glaucoma is not infrequently diagnosed as incipient cataract and that patients have been advised to postpone consultation with a specialist until the so-called cataract had ripened.

One instance of this may serve to impress upon you the disastrous consequences which may result from such advice: Some years ago I was called to operate upon a case of cataract in a neighboring state. I had not seen the patient but was told by her physician that the cataract was mature and was in excellent shape for operation. To my utter amazement, upon making a preliminary examination, I found the lenses of both eyes perfectly transparent, pupils widely dilated, optic nerves deeply cupped and atrophied, and eyeballs stony hard. The good doctor, a man of excellent repute in his neighborhood, had mistaken a simple glaucoma for beginning cataract, and, in the kindness of his heart, had prescribed daily instillations of atropine for the sole purpose, as he expressed it, of enabling his patient "to see around" the cataract until opacification became complete. It is needless to add that I missed a very good operative fee in this case.

The early recognition of the congestive or inflammatory types of glaucoma is absolutely essential if the eye is to be saved and useful

*Read at meeting of Valley Medical Association, in Staunton, Va., May, 1921.

vision preserved. Treatment, to be effectual, must be instituted before the destructive changes, incident to the disease, have occurred. It is, therefore, of the utmost importance that the general practitioner, under whose observation the patient frequently comes, should have, at least, an intimate knowledge of the cardinal symptoms of glaucoma and should be able to differentiate it from some of the other inflammatory conditions of the eye. Failure to do this spells disaster, while the ability to recognize the glaucomatous state with an appreciation of its significance and a knowledge of its destructive action will serve, in most instances, to preserve the integrity of the eye and restore useful vision to its owner.

The symptoms which I propose to discuss from the standpoint of differential diagnosis will be those which every medical man should be able to recognize and interpret without the instruments of precision and the more elaborate methods employed by ophthalmologists. I shall not refer to ophthalmoscopic examinations, tonometric records, or visual field interpretations. My remarks will be confined to those signs and symptoms which can be elicited by exercise of the fingers, the eyes, and a certain amount of gray matter.

At the outset, it should be remembered that glaucoma is a disease of adult life. It rarely occurs before the age of forty. Less than one per cent. of all cases occur earlier than twenty. It continuously increases up to and during the seventh decade so that between sixty and seventy it is more than twice as common as from forty to fifty.

The acute glaucomatous attack may or may not be preceded by a stage of prodromes. In some instances no history of previous eye trouble will be described by the patient and the disease develops without warning, coming, as it does, suddenly, as a thief in the night. In other cases a very definite history of the characteristic prodromal stage will be given and the patient will intelligently describe having had, at times, attacks of foggy vision, slight periorbital pains, a desire for stronger reading glasses and the phenomena of colored haloes around artificial lights. A detailed account of such manifestations in an elderly person with a painful eye would strongly suggest the possibility of glaucoma

before an objective examination had been made.

The acute attack usually begins during the night, sometimes, as has been mentioned, preceded by prodromes and sometimes without previous warning, and it is characterized by certain well defined symptoms. These signs are so infallible and are so easy of recognition by the unaided eye and the sense of touch that the average medical man, with a fair degree of intelligence, should have no difficulty in making a diagnosis.

The objective symptoms which I wish to discuss and to emphasize are the following: Increased intraocular pressure, dilatation of the pupil, shallowness of the anterior chamber, and steaminess and anesthesia of the cornea. The intraocular changes which appear after the acute attack has subsided will not be referred to.

Increased intraocular tension is a constant and pathognomonic symptom of the congestive types of glaucoma. While it is true that elevation of tension does occur in some of the deep inflammatory conditions of the eye, as, for example, uveitis, it is not a constant symptom in these diseases and it does not exhibit the same characteristics as are found in glaucoma. An exact estimation of the tension and its variation from the normal can only be determined by the tonometer. It is not necessary, however, that the use of this instrument should be resorted to in cases of acute glaucoma. Palpation by the finger tips will, in nearly every instance, reveal an increase over the normal. This can be best accomplished by having the patient look strongly down and applying the finger tips through the closed lids opposite a point in the sclera just above the corneal margin. By alternate pressure in this location an increase of tension can usually be detected. The tension of the normal eye may be roughly compared with the sensation one would obtain from making pressure on a rubber ball partially distended by water, while that of the glaucomatous eye imparts to the finger a feeling of hardness and lack of resistance somewhat similar to the sensation one would receive in attempting to palpate a highly distended rubber ball. In cases of unilateral involvement, it is an excellent plan to compare the tension of the affected with that of the unaffected eye. In these

instances, if the apparently sound eye has not been subject to previous glaucomatous attacks, a marked difference in the tension of the two will be apparent.

Dilatation of the pupil, due to paresis of the ciliary nerves with a lowering of the blood supply to the iris through constriction of its vessels, is a fairly constant manifestation of glaucoma. While the size of the pupil is increased, the characteristic appearance is the alteration in the shape. It is no longer round but oval or egg-shaped. The mobility, too, of the iris becomes sluggish if not totally inactive.

Diminution in the depth of the anterior chamber is to be expected in glaucoma, the conditions being brought about by the pushing forward of the lens and the peripheral portion of the iris. The depth varies in different cases from an almost imperceptible degree to the complete obliteration of the chamber. When the intraocular pressure is increased and the tension of the tunics suddenly raised, a condition of oedema or cloudiness of the cornea is set up from the interference with the flow of corneal lymph and thus it is that in glaucoma of the congestive type, we have the condition which is spoken of as the steamy cornea. The corneal surface resembles a piece of glass which has been dulled by being breathed upon. If the surface is touched with a wisp of cotton it will be found to be anesthetic, either at certain points or entirely throughout its area. This, in brief, describes the important objective symptoms which may be recognized without any special training in eye work. The subjective symptoms with which you are, no doubt, perfectly familiar and which deserve special mention are two, viz: pain and depreciation of vision. Pain during glaucomatous attack is sharp and lancinating and is usually felt to a greater extent in the head than in the eye. It frequently becomes so severe as to induce nausea and vomiting. The face may be pallid and the extremities cold or there may be flushing and general fever.

Depreciation of vision during an acute attack of glaucoma is due to the cloudy state of the cornea. If the tension is exceedingly high, it may be reduced to mere perception of light. As the attack passes off and the tension is lowered, normal vision may be obtained,

but each fresh exacerbation means further loss of sight. In the latter stages of the disease, the reduction of visual acuity is due to secondary atrophy of the optic nerve.

It is a lamentable fact that errors in diagnosis in this condition are much more common than they should be and many eyes have been permitted to go blind and untold suffering brought upon its victims simply from failure to recognize and interpret its symptoms. In my own experience, and I know it coincides with that of other men, I have not infrequently had referred to me patients suffering with acute glaucoma who had been treated with atropine in the delusion that the case had been one of iritis, or some deep inflammatory trouble. Though it may seem to be an inexcusable error, the disease is sometimes diagnosed as conjunctivitis and the glaucomatous attack has been frequently mistaken for a so-called "cold in the eye", for neuralgia, and for reflex ocular pain.

By far the most common error, and one which leads to more serious consequences, inasmuch as the disease is always aggravated by the instillation of atropine, which in almost all circumstances is contraindicated, is mistaking a glaucoma for iritis. Iritis and glaucoma have only two symptoms in common, pain and diminished vision. In other respects they are totally unlike as any two conditions may be. In view of the fact that the error is of such frequent occurrence and of such serious import to the patient, I wish to point out as briefly as possible the marks of distinction in the two diseases.

In the first place the age of the patient should be considered. Glaucoma is essentially a disease of advanced adult life, while iritis, though occurring at any age, is more apt to be encountered in the earlier years of life. The etiology of glaucoma is shrouded in obscurity, while iritis has a definite etiological basis, the disease being associated with syphilis, gonorrhoea or tuberculosis, or being dependent upon some focal infection. The characteristic feature of glaucoma is increased intraocular pressure. In iritis the tension either remains unaltered or is lowered. In glaucoma the pupil is dilated and assumes the characteristic oval shape, while in iritis it is contracted and, when adhesions are present, shows an irregular outline. The pupil in

glaucoma contains no plastic exudate, while in iritis it may become entirely occluded. The depth of the anterior chamber is diminished in glaucoma, while it is unaltered or may be increased in iritis. The steamy cornea, so suggestive of glaucoma, does not appear in iritis. The structure may lose some of its transparency but the opacification is due to exudates in its posterior surface and not to interference with the lymph flow from pressure.

This in brief and very imperfectly covers some of the important differences in the two conditions. Inasmuch as the proper treatment of the one aggravates and intensifies the pathological process of the other, it should be quite obvious that the ability to recognize the essential differences between the two diseases is all important.

An exhaustive study of the subject of glaucoma is not possible in a communication of this character and I have attempted only to point out those characteristics which the general practitioner should be able to observe. If I have succeeded in exciting enough interest in its phenomena to develop in you the desire for a more intensive study of its interesting problems, the object of this paper will have been accomplished.

DISLOCATION OF HEAD OF THE HUMERUS COMPLICATED BY FRACTURE OF THE SHAFT AT THE ANATOMICAL NECK.

By CHARLES STANLEY WHITE, M. D., F. A. C. S.,
Washington, D. C.

Largely through the instrumentality of the X-ray, and particularly the stereoscopic view, fracture-dislocation of the shoulder has been recognized with some frequency in the past two decades and, while the condition is hardly common, it cannot be considered rare as Stimson states that 117 cases had been reported up to 1896. Unquestionably, better diagnostic methods have permitted a familiarity with this traumatic shoulder which was denied the surgeon of the previous generation, but the formidable condition is one which will always tax the judgment and skill of the operator.

We are not able in any considerable number of cases to trace the trauma which first dislocates and later fractures the humerus, a summation of forces apparently, nor is this

important; but to determine the nature of the injury is quite to the point. It must be true that many cases are never recognized, some are diagnosed at a late date, and in a majority of cases, the Roentgenologist gives us the necessary information. More often the surgeon recognizes either a fracture or dislocation as symptoms of both are present, but rarely, unless he be on the alert, will his palpating fingers interpret correctly the total deformity. Two conditions are present which, if revealed in our examination, will lead to the diagnosis:—First, the head of the bone in an abnormal position, and second, rotation of the shaft is not shared by the head. How easy it seems to state simple facts, but quite another thing to develop them. The mere swelling of the soft parts may make such a deduction impossible, and other possibilities render the establishment of these two essentials for diagnosis beyond the scope of the average practitioner.

It has been the experience of most surgeons of wide experience to be called upon to pass judgment on supposed dislocations only to find a fracture of the surgical or anatomical neck of the humerus on the one hand, and just as often be requested to reduce a dislocated shoulder which has not been dislocated but fractured.

An unfortunate situation injects itself into a case when attempts to reduce a dislocation result in fracture of the neck, usually the surgical neck of the humerus. This is not infrequently the cause of the condition we are discussing, and while not wholly inexcusable, can be attributed to faulty diagnosis and more faulty methods of reduction. Even in this enlightened age, forcible reduction of the humerus, using the shaft as a lever, with the heel or fist in the axilla, has not been replaced by the rational and safer methods of Kocher and Stimson. Dislocations in the aged are uncommon and there should be no lingering doubt in our minds regarding the injury before employing even the gentlest manipulation. Violence here is just as unnecessary as in the abdominal cavity.

Assuming the condition is recognized by the usual physical examination and confirmed by X-ray, the method of dealing with it is paramount. The easiest but an unsatisfactory solution is to leave the head dislocated and depend upon a crude articulation of the upper end of

the shaft in the glenoid fossae. A debilitated condition of the patient may necessitate this makeshift procedure. Reduction of the fracture, converting the injury into a simple dislocation has been advocated, but if one entertains hope of later reduction through manipulation of the shaft of the humerus, he is doomed to disappointment. Excision of the head of the humerus and implanting the shaft into the articular surface of the scapula, possibly combined with arthroplasty, has been employed with great frequency. The method which theoretically should give the best results is open-reduction of the dislocated head and reduction of the fracture. The objection that may be raised is the possibility of necrosis or absorption of the head, but this is a matter of technique rather than viability of the bone. What may be done with bone grafts, gives us some conception of the usefulness of the head of the humerus. Reduction of the dislocation without the open operation should be attempted in all cases, in spite of the fact that it generally results in failure. It would hardly seem necessary to emphasize the necessity for a rigid technique were it not for the reason that many operators ignore the teaching of Lane, whose brilliant achievements in bone surgery have been largely the result of a masterful technique. It has been pointed out by numerous writers and visitors to Lane's Clinic, that the excellent results of this surgeon are in no small part due to infinite care of a sterile field. The day has passed when the bone fragments can be manually explored and tampered with, when the fingers from an unprotected skin surface can palpate and manipulate traumatized osseous tissue. While it may be true that the ideal Lane technique cannot obtain without a trained corps, a near approach to it is possible and imperative if we wish to get the uniform results our patients have the right to demand.

The following case is what we consider the method of choice.

Miss T. was run down by an automobile and removed to Garfield Hospital. In addition to the shoulder injury, she was suffering from shock and, it was thought at the time, internal injuries, and it was probably due to the latter that an examination and X-ray study was postponed until one week later, when fracture of the anatomical neck and dislocation forward of the head of the humerus was reported.

Under general anesthesia a futile effort was made to reduce the dislocation by manipulation and immediately an incision was made between the deltoid and pectoralis major. The head was found beneath the acromial process and was "skidded" with some difficulty into its normal position. The fracture was easily reduced and the arm placed in complete abduction and outward rotation by a cast encircling the chest, arm and forearm. A wooden brace from the chest to the elbow was included in the plaster to lend support. The forearm was flexed to a right angle with the arm and a bucket handle was incorporated in the cast as a rest for the hand. At the end of two weeks the axillary part of the cast was cut out and a wrought iron strap hinge, such as is commonly used on wooden gates, was placed in the axilla, one leaf extending under the arm, the other on the thoracic part of the cast, both being secured by additional plaster bandages. The remainder of the cast about the shoulder joint was removed. The brace (a piece of splint) holding the arm in abduction, was cut out, leaving a short abutment at each end, through which were bored holes large enough to admit a small peg. With several pieces of lath of various lengths, with holes in either end, we were able to increase or diminish abduction at will and maintain the position without discomfort to the patient. At the end of four weeks all apparatus was removed, and active and passive motion instituted. The recovery has been all or more than we expected and we believe the function is more than ninety per cent. of normal.

911 Sixteenth Street.

SYMPTOMS AND DIAGNOSIS OF GALL-BLADDER DISEASE.*

By C. C. SMITH, M. D., Norfolk, Va.

The rapid growth of experimental methods in the medical sciences has demonstrated the uniqueness of the body organization in its complexities and it stands out pre-eminent among all the phenomena of nature. Even though we appreciate the fact that perhaps even greater strides will lead us to a fuller understanding of the absolute dependence of proper co-ordination and inter-relationship of the various body forces, still we can even now under-

*Read before the Surgical Section of the Norfolk County Medical Society.

stand that disease, after all, in its very essence, is a disturbance of this body balance or equilibrium and that the slipping of even a minor cog may, if allowed to go unnoticed, not only throw the whole mechanism out of gear, but by logical progression go on to a closed vicious circle.

There is certainly no greater or more necessary part of this mechanism than those organs concerned with the utilization of fuel for the production of energy and the proper conduction of life. These organs are, as we know, located in the abdomen and it is to this important region that surgery perhaps is being called more frequently to cope with disease. As evidenced both by reports of operative procedure and necropsy statistics, gall-bladder disease ranks next to appendicitis as the commonest intra-abdominal lesion.

Most writers on this subject have noted the greater preponderance of the disease in the female sex, the ratio three to one being a conservative mean. It is essentially a disease of middle life, though undoubtedly many lesions originate early in life but remain dormant or produce indefinite minor or vague symptoms until the third or fourth decade; the early age of five, however, is recorded by Buchanan in his series of three hundred cases. With the possible exception of ulcer of the stomach, no other disease so well bears out the axiom of Dr. R. C. Cabot that, to get an intelligent complete history is to have a large part of your diagnosis made, for it is on the symptoms that we base our diagnosis of gall-bladder disease.

In order to properly appreciate these symptoms, we will briefly sketch the anatomy of the region with special reference to the nerve supply. The gall-bladder is situated on the inferior surface of the right lobe of the liver in a large but shallow depression termed the cystic fossa, the peritoneum covering the under surface of the liver being reflected on to and covering the unattached fundus and inferior surface. The cystic duct extends from the gall-bladder to the termination of the hepatic duct, with which it unites to form the common bile duct, the hepatic duct originating at the right extremity of the transverse fissure of the liver by the junction of the two or three terminal biliary ducts. The common bile duct results from the junction of the cystic and hepatic and run in a direction continuous with that of

the hepatic duct, from above downwards, a little from right to left, running from behind the first part of the duodenum to the upper border of the head of the pancreas, then it turns a little to the right and forward within the pancreas to the posterior internal aspect of the second portion of the duodenum, traversing the walls of the intestine into which it opens. The blood supply of the gall-bladder is derived from the cystic artery, a branch of the right division of the hepatic; in addition, the gall-bladder derives some fine branches which come directly from the liver. The cystic veins enter the right branch of the portal vein. The lymphatics are closely related to those of the liver, and are deserving of far more consideration in the etiology of gall-bladder disease than is generally accorded them since it has been proven experimentally that infectious processes can be produced when the cystic vessels have been ligated. Moreover, in the recent literature, the association of adjacent hepatitis in gall-bladder infections leads one to consider the lymphatics performing according to rule the role of conveyors of infecting organisms.

All the various glands and involuntary muscles of the body receive their nerve supply from the so-called vegetative or autonomic nervous system. This consists of two subsidiary systems which differ from each other in their origin, in the course of their fibres, and in their effects upon the visceral function. The first of these sub-divisions of the vegetative nervous system is known as the sympathetic system; its proximal fibres emerge from the thoracic and lumbar portions of the cord and terminate about nerve cells in the sympathetic ganglia in the neck, the chest and the abdomen; from these ganglia a second set of nerve fibres proceed to the various glands and smooth muscles. The second sub-division of the vegetative system is known as the para-sympathetic or crano-sacral autonomic system; its fibres leave the cranial and sacral extremities of the cerebrospinal axis and are found in the oculomotor, the trigeminal, the vagus, and certain pelvic nerves. In most instances, a single organ receives fibres from both the sympathetic and crano-sacral autonomic systems and, when this is the case, the two frequently exert a mutually antagonistic action; for instance, stimulation of the vagus increases the tone and the contraction of the intestines, while stimu-

lation of the splanchnic nerves causes relaxation.

What initiates the impulses in the vegetative nerves that lead to fundamental disorders in the internal organs? It may be changes in the medullary or other centers, changes in the higher cerebral centers or reflex stimuli from other parts of the body. It is with reference to these reflexes that this paper was first conceived and the interesting study of the close association of the nerves of the gall-bladder to neighboring regions that led to an explanation of its reflex symptoms. Probably the most constant and common symptoms noted in our series of gall-bladder cases were those of a sense of choking or fullness high up in the epigastrium, or, in other words, a cardiospasm of varying degrees of severity and frequently with this a hiccough. This was so frequent that one of us, Dr. R. L. Payne, suggested a study of the nerve supply to the gall-bladder and the following distribution of the nerves was shown to exist. The gall-bladder is supplied by the cystic plexus, a branch of the hepatic plexus, which in turn receives filaments from the left vagus and right phrenic nerves. The esophagus and cardium are supplied by the esophageal plexus formed by filaments of both vagi and is considered a portion of the vagus. Irritation of the gall-bladder would, therefore, cause reflex disturbance of the esophagus by reflexes transmittent through the hepatic plexus to the vagus nerve, which coincides with the investigations of H. H. Meyer and R. Gottheb, of Berlin, that stimulation of the sympathetic relaxes the gall-bladder and esophagus, whereas, stimulation of the cranio-sacral cramps the gall-bladder and inhibits the esophagus, hiccough, of course, being caused by stimulation of the filaments of the phrenic.

With no attempt to take up the various pathological types of gall-bladder disease, we will consider the clinical sub-division from the standpoint of symptoms. These are grouped as follows after Jacobson:

First—TYPICAL BILIARY GROUP. These are grouped with colic evidently associated with the movement of the stone down the biliary passages. These cases are characterized by severe pain, paroxysmal in character, in the right hypochondrium or epigastrium, radiating usually to the back and shoulders, usually accompanied by nausea and vomiting and re-

quiring morphia and often chloroform for relief. Recurrent attacks extend over long periods of time and with increasing frequency, associated at times with jaundice. This type, as a rule, is not difficult of diagnosis, the pain is more or less characteristic, of great severity, with sweating and marked prostration; the skin is hot and moist, or bathed in perspiration, and there may be rigors or shivering; the "goose skin" sensation is sometimes present, though it is more often found in the more pronounced feverish attacks. After cessation of pain, there is tenderness over the gall-bladder which may persist for days. It is to this class that all types of stones in the various ducts belong; jaundice may or may not follow, depending of course on the pathology.

Second—ATYPICAL BILIARY GROUP. In this group there is no acute biliary colic. The symptoms are merely dull aching pain in the upper right quadrant with tenderness, fever, some nausea and vomiting, and a varying degree of leucocytosis. It is essentially the inflammatory type and, if jaundice is present, it is apt to be due to inflammatory change in the hepatic duct or pancreatitis. The pain is usually of several days' duration and it is this type which is so often associated with pains in other parts of the body, the gall-bladder no doubt acting as a foci of infection. To this group we assign all inflammations from acute catarrhal cholecystitis to the empyemas.

Third—GASTRIC GROUP. This is the group that demands much attention, study and careful differential diagnosis. It is probably the incipient stage of the other two and the stage in which cholecystectomy offers most in the prevention of further complications. The symptoms are those described by Moynihan, as masked or inaugural symptoms. There is a feeling of fullness high in the epigastrium, a sensation of choking, hiccough, flatulence, and belching, which are brought on by special articles of diet such as cheese and apples, a "qualitative rather than a quantitative dyspepsia." The pain, if present, is dull and is relieved by eructations and not by food.

Fourth—BILIARY-GASTRIC GROUP, in which are placed those cases with symptoms found in groups 1 and 3, either conjointly or in sequence.

The diagnosis is based largely on symptoms;

age and sex are considered, careful and painstaking physical examination with full appreciation of delicate shades of difference is important, while the laboratory, X-ray, and clinical tests are merely confirmatory. Gastric analysis is of doubtful value except that the acid is more apt to be normal or low than to be high. Rehfuß claims that considerable information can be obtained from a chemical and bacteriological examination of the bile procured through duodenal tube. The study of the cholesterol content of the blood may add something of value; study of the fat content of the stool may elicit some information in an overshadowing pancreas; and the echinococcus fixation test may explain the predominance of liver symptom in the picture. The value of the X-ray varies in the hands of different roentgenologists; it is probably conservative to say that not more than 25% of positive diagnoses by this method will be confirmed at operation. The X-ray, however, is of great usefulness in eliminating the gastro-intestinal tract as well as renal calculi.

The differential diagnosis is most often concerned with renal colic, gastric or duodenal ulcer, appendicitis, acute gastritis, hyperchlorhydria, and diseases of the pancreas. Other conditions mentioned as rarely of consideration are mucous colitis, intestinal lithiasis, epigastric hernia, and hepatic crisis in tabes, neuralgia of the abdominal sympathetic, aneurism of the abdominal aorta, lead colic, angina pectoris, lumbago, floating kidney, and neuritis of the shoulder.

In renal colic the pain tends to radiate down the ureter instead of forwards toward the epigastrium and the hypochondrium or to the back; the kidney may be tender on palpation in the loin; urinalysis is often valuable, showing pus, blood, and freedom from bile; X-ray may show calculi or pathological kidney.

The pain of a frank biliary colic is very much more severe than that due to gastric ulcer; fever, sweating, and prostration are in favor of biliary colic. The relation of pain to food is different and the point of greatest tenderness is often definite. Duodenal ulcer is twice as common in men as in women; the pain is relieved by food or an alkali; haematemesis may occur or there may be a melena without haematemesis; ulcer of the second part of the duodenum is rare, but when it does oc-

cur it is extremely difficult of differentiation. Barium meal, shown by the X-ray, is often our greatest aid in eliminating the stomach and duodenum, and it is probably the only means of differentiating dilatation of the duodenum and duodenal diverticula, which give vague digestive disorders very similar to those of gall-bladder disease.

Appendicitis may confuse any intra-abdominal condition and he who loses sight of a high appendix with an undescended cecum in the study of gall-bladder conditions is in for a fall. Usually the location of the point of tenderness, the rigidity of the lower rectus, and other signs and symptoms of appendicitis are sufficient to make the diagnosis clear. However, be it borne in mind that from their close physiological kinship it is to be expected that gall-bladder disease and appendicitis frequently go hand in hand.

Symptoms of acute gastritis coming on suddenly are apt to be confusing. However, the symptoms are usually less urgent, the tenderness is directly over the stomach, the history of indiscretion of diet and early relief of the more severe symptoms are usually to be found.

Pancreatitis complicates gall-bladder disease more often than is commonly supposed, some observers recording some change in the pancreas in as high as 33%. Frank acute pancreatitis shows profound collapse, pain is intense, constant, and more in the epigastrium. Pancreatic colic due to calculi in Wirsung's duct is suggested by discovery in the stools of calculi composed of the carbonate and phosphate of lime.

Early diagnosis is imperative, for surgery at this stage is comparatively simple. When the bile passages are involved, we are confronted with a proceeding which ranks high among technically difficult operations, and the end results are less satisfactory; when the pancreas is involved, the outlook for permanent relief is much obscured; and the hopelessness of carcinoma of the bile passages needs nothing more than mention. The early recognition of surgical conditions of the bile passages is obvious; when diagnosis is made the treatment is surgical, as the complications and sequelae are too constant and grave to allow any other but this procedure.

AN UNUSUAL TUMOR OF THE OVARY.

By WM. EDGAR DARNALL, A. M., M. D., F. A. C. S.,
Atlantic City, N. J.

Miss M. I., an unmarried lady, 52 referred by Dr. C. Garrabrant, of Atlantic City. She is of American birth. There is nothing significant in her family or clinical history. She is thin and anemic, has had no children, miscarriages, leucorrhea, headaches or backaches. Her appetite and digestion are fairly good but she has not felt well for several years. Being a pronounced Christian Scientist and much opposed to surgery, she has tried everything else she ever heard of for relief. She was told she had a fibroid tumor of the uterus and that X-rays would cure her. The result of the treatments she took produced an X-ray burn over the abdomen as large as a saucer, which has given her much trouble and, of course, would not heal. Her menstrual periods first appeared at the age of fifteen, were always regular and normal in amount and not painful. She passed the menopause six years ago. The urine is negative, blood pressure normal. The blood showed slight anemia and slight increase of leucocytes. Wassermann negative.

The vulva and vaginal outlet are normal, the uterus normal as to size and position, and tubes normal. The abdomen presents a full round mass, uniform in contour, giving the appearance of a full term pregnancy.

Failing relief from all other sources, she finally accepted surgery. An oval incision was made and the entire burned area of skin dissected out down to the fascia. On entering the abdomen, a large round tumor, freely movable and without adhesions, was easily delivered. It was found to be attached by a pedicle to the left ovary with the elongated left tube stretching over it. This whole mass was removed without difficulty, the abdomen closed by overlapping the fascial layer, and the skin brought together.

The tumor weighed twenty-five pounds. It was filled with a creamy pus, which was reported sterile by the pathologist. When opened, the pus flowed out but at the bottom of the cavity were seen several lumpy hard elevations or projections into it, reminding one of the hills and mountain peaks on the floor of the ocean, covered by this sea of pus. The projections were hard to the touch and, on section, cut like fibrous tissue.

The cyst was unilocular in character. Its walls were of grayish color and fully one inch thick but presented no evidence of inflammatory action. The pathological report showed evidence of traces of ovarian stroma on the outside of the thickened wall, but in the wall itself there was only fibrous tissue. The lumpy projections at the bottom of the cavity showed also nothing but hard fibrous tissue. There was no evidence of malignancy.

It is well known that one of the chief dangers in the prevailing fad of treating fibroid tumors of the uterus by the X-ray is a suppurating degeneration of the tumor. After a careful study of this case, the deduction arrived at was that this tumor was originally a fibroid tumor of the ovary which grew to some size; that as time went on it began to degenerate from within, the injudicious treatments by the X-ray no doubt playing a prominent part in aiding the process or, in fact, starting it in the first place. The process of suppuration continued until finally liquefaction of the whole tumor occurred with the result described.

Recovery of the patient was uneventful. The skin incision united perfectly. After a year and a half she reports herself in excellent health.

THE TREATMENT OF ERYSIPELAS.*

By THOMAS J. TUDER, M. D., Keokee, Virginia.

In most of the text-books, even the more modern ones, ichthyol stands at the head of the list of local remedies for the treatment of this disease, and in this section it was the first thought, certainly of most of us, when confronted with a case of erysipelas, but when the World War came on it became impossible to get the drug, and I shall never forget the first case I had after the supply was exhausted.

It was of the face in a feeble woman of 60, and it was spreading like wild-fire. I did the best I could with other remedies, and my patient was growing steadily worse, and I felt sure she would be one of the war casualties, when I decided to try saturated aqueous solution of boric acid applied ice cold, which I selected from the literature.

It was in March and cold, and the old lady said she had not washed her face in cold water, except in summer, since childhood. In twenty-four hours she admitted that she felt

*Read before the Wise County Medical Society in Norton, Va., August 24, 1921.

better, and it was apparent that the local spread was checked; the affected areas were paler, there was less swelling, her general condition was improved, and she was well within a week.

Since that time I have treated fifteen other cases in this way and all of them recovered. I have sterile strips of gauze placed over the affected areas, and these wet every hour, and in the more severe cases every half or even every quarter hour, with this solution always ice cold. I have used it at all seasons, but more in cold weather, and have never had any colds, pneumonias, or other bad effects from it. I endeavor to have the bed and the clothing about the remainder of the body kept dry, and have not used it extensively over the trunk in cold weather.

I realize that one swallow, or even sixteen, cannot make a summer, but I believe that in this remedy we have the most valuable one available for the local treatment of this disease. I heard the masterly paper of Dr. J. H. Mason Knox, Jr., of Baltimore, (*Sou. Med. Jour.*, Vol. XIV, No. 5), read before the Southern Medical Association at Louisville last fall, and the discussion that followed, and I know that the tendency is to regard erysipelas as a self-limited disease, and it seems conceded that systemic treatment, other than cathartics, sedatives, and stimulants as indicated, and a general supportive regimen, is of no avail, but I am convinced that in this local treatment, we have one which stands in the same relation to ichthyol in the treatment of this disease that the modern ice cap does to the old time soap poultice as a local application in acute appendicitis.

The pathology of erysipelas shows a diffuse inflammation of the skin and subcutaneous tissue, and streptococci are found scattered through the lymph spaces, and many believe that the inflammation centers so deeply that antiseptics applied to the skin would ordinarily have to be strong enough to destroy the overlying tissue to reach the chief seat of the disease. However, we are alert to prevent contagion, and its occurrence where surgical cleanliness is not observed would indicate that some of the germs are about the surface, and then there are frequently vesicles and even pustules, and, occasionally, gangrenous areas, and the heat, pain, redness, and swelling always present show some degree of superficial inflamma-

tion, and for all this the boric acid is cheap, cleanly, soothing, and certainly harmless. It is possible that most of the virtue of this treatment is in its coldness, and, indeed, excellent results have been reported from ice water applications.

THE SIGNIFICANCE OF CONVULSIONS IN CHILDREN.*

By H. R. FAIRFAX, M. D., Bristol, Va.

Convulsions in children may be either tonic or clonic. A tonic convulsion is characterized by continuous contraction of the affected muscles which may last for a few seconds as at the onset of an epileptic paroxysm or for days as in tetanus. A clonic convulsion is distinguished by rapidly alternating contractions and relaxations of the muscles involved.

The body and limbs in a tonic convulsion are rigid and immovable, contrasting vividly with the agitated and violent motions of the clonic form. In reflex convulsions we have undeveloped inhibitory mechanism. Certain parts of the cerebral centres have an inhibitory action over the function of other parts, rendering the motor cells more stable and less liable to part unduly with their energy. It is important to determine whether it is idiopathic, symptomatic reflex irritation, or of a central affection. The nerve cells are like too inflammable tissue which flares out at the smallest spark. Often, the convulsion ceases with one attack and when the physician arrives he finds the child asleep and when it awakes it will be apparently well, but the prognosis should be guarded and as a rule not given until after long and close observation. If the convulsions continue for hours, they threaten life by obstruction to respiration, passive congestion of the brain and exhaustion. If the convulsion comes on immediately after birth and persists the chances are that there is a meningeal hemorrhage or serious injury to the cortex. Convulsions are more pronounced in girls and are inherited in about one-third of the cases from ancestors of a neuropathic or tuberculous constitution. The ages most frequently attacked are two and five years, then next at puberty. Children of school age may acquire a predisposition to convulsions by mental strain, worry, bad sys-

*Read before the Southwest Virginia Medical Society, in Marion, September 22, 1921.

tems of school, and domestic training. Climate and season have some influence over convulsions. Chronic attacks occur oftener in spring and autumn on cloudy days and are more frequent in temperate climates. First of all, as a predisposing cause rachitis must be considered. Its presence greatly predisposes to convulsions and justifies the expectation of recurrences. Next in frequency of the etiology of convulsions are gastro-intestinal disturbances, especially over feeding. An illustration: several years ago a mother brought her two year old child into my office having one convulsion after another, she thinking it was choked on a bone as it was sitting at the breakfast table when it fell over with the first convulsion. She put the child on my operating table and, without giving any further history, ran away ringing her hands and crying, to find the father of the child. I examined the child's throat but found no obstruction, so gave it a few whiffs of chloroform. In a short while the spasm was relaxed. In about five minutes another spasm started. These continued off and on for fifteen or twenty minutes, after which the child vomited about a double handful of half chewed beef, when the spasms ceased.

Phimosis with an adherent prepuce is not an infrequent cause, as illustrated by two cases to which I was called recently, boys, aged two and four years, both screaming with pain between the convulsions, which were rather mild. After dilatation, breaking up the adhesions, removal of hard concretions of smegma from around the corona, and application of a little vaseline or castor oil to prevent reformation of adhesions and relieve the burning, there was no further trouble.

Hydrocephalus is another perhaps less common, but not infrequent cause. In one case I have had of this, a child eighteen months old had been having frequent convulsions for 24 hours. I gave chloroform and bromides, but the effect was not satisfactory; perhaps I did not give enough, but was afraid to give more. I decided on the more radical treatment and shaved the hair from over the anterior fontanel, disinfected the skin and made a small opening, letting out about an ounce of fluid. Convulsions ceased at once. The child lived about two weeks without a return of convulsion, but died of T. B. I have had two or

three cases where I thought convulsions were due to delayed dentition. In these I lanced the gums, after trying other remedies, and the convulsions were relieved, but I was not sure which gave the desired relief.

Good authorities state that delayed dentition may cause convulsions but rarely without rachitis. Some of the many other causes are; meningitis, the partaking of articles of food which are difficult to digest, such as salads, fruits, fresh bread, meats, also prolonged and faulty feedings in sucklings, excesses in this direction on the part of the nurse or mother, and abuse of alcohol or mental excitement. Other causes of convulsions are irritations, as burns, eczema, (though more rarely), worms, foreign bodies, e. g., in ear, or nose, also nasal polyps, adenoid vegetations, anomalies of the genitalia, concretions such as kidney and bladder stones, and prolapse of rectum. Febrile diseases often begin with convulsions, which in young children replace the chill.

Pneumonia and pleuritis not rarely begin with convulsions. Acute infectious diseases (scarlatina, measles and variola) are sometimes ushered in with convulsions. Uremia and physical causes, such as sudden fright, are sometimes etiological factors. Cases of severe fall or blow upon the head are often followed by convulsions and the history of trauma is often of more importance etiologically than the real lesions. Sometimes the convulsions are the beginning of true epilepsy, which may later, possibly not until years after, follow in typical form. At all events, everything must carefully be looked into and all circumstances weighed even from the point of view of prognosis, since the prognosis in convulsions is of most vital importance to the child's anxious parents and relatives.

An anatomical lesion of the brain must be excluded. The latter is indicated by unilateral convulsions, notably when the same side is affected not only in the first, but in all subsequent attacks. It must, of course, be borne in mind that this sign is not absolutely positive, for on the one hand, bilateral convulsions may appear in unilateral brain disease, e. g., tuberculosis, and, on the other, unilateral convulsions are not always dependent upon true cerebral disease. Finally, the convulsion may be unilateral in the first attack and bilateral in those following. Unilateral convulsions,

however, always remain an important factor and demand careful examination of the child during the intervals of the attacks. Some brain diseases, as tuberculosis and tumors, manifest themselves even for months by nothing else than periodical convulsions while the other symptoms do not develop until later. Treatment is, of course, removing the cause, if it can be located and is possible. During the attack the chief aim should be to arrest the convulsions immediately, irrespective of their etiology.

It is the moment for action and not for questioning. Immediate chloroform anesthesia, a teaspoonful poured on a handkerchief and held before the child's nose so that an excess of air is allowed, is an almost sure remedy. It may be used in children even two or three months old until the convulsions cease, but watch the respiration and pulse. Cyanotic discoloration of the face as a result of the convulsion and broncho-pneumonia form no contraindication, but existing collapse, very small, rapid pulse and cold extremities do.

Enemata of chloral hydrate, a luke warm bath in which has been put a little powdered mustard, may be tried in mild cases. As soon as the attack has subsided, inquiry should be made as to the possible causes to prevent recurrence of the convulsions, and to reach a conclusion in regard to the prognosis.

There are but few things that I know of that are more distressing and can cause more anguish on the part of a mother in the same length of time than convulsions, and if this paper will recall or suggest any treatment by which they may be avoided, I will feel amply repaid for the time and trouble taken.

Correspondence

Preliminary Report.

Richmond, Va.

Nov. 26, 1921.

TO THE EDITOR:—

Following up our 'phone conversation, I am writing to report seven cases of jaundice in children under eight years old, within the past six days. One of these I have in a hospital under observation, the others are being treated at home. I will give you detailed reports later on.

I simply want to put these on record as a series of cases.

R. D. GARCIN, M. D.

Secretary's Announcement

Legal Defense for Members of the Society.

Only one company is writing Physicians' Liability Insurance in Virginia at the old rate of fifteen dollars a year. Several withdrew and others increased their rates, nearly doubling them. To meet this situation and to assist in keeping the rate down to fifteen dollars, the Society at its last meeting authorized the establishment of an optional plan of defense for members sued for alleged civil malpractice. Based on the experience of other state societies this can be taken care of at a cost of one dollar per member. No insurance is included in this but for the great majority of physicians legal assistance is the only thing necessary, as ninety-five per cent. of the suits brought against them fail. All members of the Society are requested to join in this arrangement. It will assist keeping insurance rates at their present low level and it will furnish the great majority of our members all the protection needed. To take advantage of this it will be necessary that each member include the additional dollar in his check for annual dues and that he mail it to the office of the Society before February 1st, 1922. The Society cannot undertake to provide legal defense for its members unless this is done. The Executive Council advises all members to support this optional plan of legal defense.

Finances.

Sixty-six members are delinquent as to the payment of their annual dues, that is, they owe for 1920 and, in many cases, for previous years. We have been unable to get answers to numerous letters, notices, bills, etc., sent them.

Future efforts to collect these accounts will be governed by instructions from the Executive Council. Two hundred and seventy members owe for the current year. Due to the present business depression all over the country our advertisers are reducing their expenses and of course our income. It will be news to some of our members to learn that they pay less than half of the running expenses of the

Society including the publication of this magazine.

To offset the loss in revenue from advertising members should pay their dues promptly and should more generously support the business policies of the magazine and this office.

Proceedings of Societies

Norfolk County Medical Society.

The Eye, Ear, Nose and Throat Section of the Norfolk County Medical Society met Thursday evening October 27th, 1921, Dr. J. Warren White, in the chair.

The first paper of the evening: Clinical Signs and Symptoms of Hypophyseal Conditions, by Dr. F. H. Redwood. The second paper: The Growing Importance of Mapping Fields of Visions, by Dr. W. E. Driver. As the two papers bear such close relationship, they were discussed together.

DR. B. R. KENNON: Dr. Redwood has called our attention to something that is very important and something we do not look out for as often as we should. I know it has been of great value to me two or three times in mapping out the field of vision in locating tumors of the brain. I do not think that we pay the attention we should to the size of the disk we use in mapping the field of vision on.

DR. W. E. DRIVER: Endocrinology is a subject most interesting and, when we have tumors about the pituitary body the optic tract is in great danger and we should always make a special study of that part of the patient and you should have no trouble in finding bitemporal hemianopsia. I just rise to call attention to this one point.

DR. J. WARREN WHITE: I agree with Dr. Redwood in being very careful about making the diagnosis on the X-ray findings only. Dr. Driver brought out a good point in his paper against fitting glasses and not taking the field of vision. It is just as important to take the field of vision as an X-ray or do a Wassermann and it should always be done before doing any operation on the eye.

The last paper of the evening was Sluder's Technique in Tonsil Surgery, by Dr. M. H. Hood.

DR. W. E. DRIVER: I don't think the Sluder operation is a surgical procedure. Every one knows when there is a pus sack in the upper

part of the tonsil you leave a small piece of tonsil in the plica and you do not take out all the lower lobe and that should be removed also. I think the tonsil should be removed surgically.

DR. J. S. HUME: I believe in the Sluder technique and follow it a good deal but find sometimes that there is a small fragment left at the base of the tongue.

DR. KENNON: I think the Sluder method is as good as any other but I do not always follow it and the only fault I find of the method is that sometimes there is a small piece left at the base of the tongue.

DR. WHITE: I think the fault with most of us in doing the Sluder operation is not having the proper technique so well brought out by Dr. Hood. I can get the tonsil with the Sluder method but have been doing the modified Sluder on children after freeing the pillars, but I do not use the method in adults. I do not agree with Dr. Hood in using gas anesthesia.

A. D. MORGAN, M. D.,
Reporter.

The Arlington County Medical Society

Met at the residence of Dr. S. T. Noland, Clarendon, Va., for a postponed meeting on November 28, 1921. Quite an enthusiastic meeting was held. Papers were read and interesting discussions and cases reported. Officers elected for the ensuing year were: Dr. F. J. Ready, Clarendon, president; Dr. W. C. Welburn, Ballston, vice-president; Dr. B. H. Swain, Ballston, secretary-treasurer.

At the close of the meeting, Mrs. Noland served an excellent lunch which was enjoyed by the members and their wives and a pleasant evening was passed by all. The wives of the members being in attendance for a social meeting, following the business session, makes the meetings of the Society doubly pleasant and agreeable.

B. H. SWAIN, *Secretary-Treasurer.*

The Northern Neck (Va.) Medical Association

Held its regular meeting in Irvington, early in November, and had two very instructive sessions. The following officers were elected for the ensuing year; President, Dr. M. Oldham, Lancaster; vice-president, Dr. B. A. Middleton, Emmerton; secretary-treasurer, Dr. R. E. Booker, Lottsburg. The next meeting is to be held at Warsaw, Va., in May 1922.

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Editorial

Resolution by Medical Society of Virginia Endorsing the Majority Report of the Commission on Medical Education in Virginia.

Whereas, The Commission on Medical Education in Virginia, appointed by the Governor to study medical education in Virginia and make a report to the legislature, has recommended that there be one state supported school in Virginia, and

Whereas, The Commission has recommended that the departments of medicine, denistry, and pharmacy be conducted by said medical school as a part of the University of Virginia, and

Whereas, The Commission has recommended that said school be conducted in Richmond, and

Whereas, The State Dental Association unanimously, and the State Pharmaceutical Association unanimously, with two exceptions, have endorsed this report, and

Whereas, The medical profession of the state has, by an overwhelming majority, indicated its appreciation of the urgent necessity for adopting this report, therefore be it

Resolved, 1. That the Medical Society of Virginia, in its annual session at Lynchburg, endorses this report and urges the state legislature and the Governor to enact the necessary laws to put it into effect at the earliest possible date, and be it

Resolved, 2. That the editor and publication committee of the Virginia Medical Monthly be instructed to use its columns in support of the Commission's report.

Action!

When this journal reaches the members of the Medical Society of Virginia in the hundred counties of this Commonwealth, the

Representatives in the House of Delegates and the State Senators will be soon leaving their homes and their constituents and going to the legislative halls in the Capitol where they will place upon the statute-book laws which affect the well being, future happiness and life of thousands of human beings. There will be many important changes and improvements in laws on taxes, on roads, on schools, on prohibition, on state finances, and on morals. They are vitally important matters and will receive the deepest consideration. But there is a question of equal importance to any current question of the day in which the medical practitioners of the State are particularly interested. That question is the adoption of the report of the Medical Commission which offers a solution to the problem of medical education in Virginia. This Commission was authorized and directed to prepare recommendations and this has been done after careful and painstaking investigation. The physicians of the State, in their regular assembly, have approved the report and have adopted resolutions urging the legislature to put the changes into effect. The next legislature will probably settle this important question.

The doctors of this State who favor this report and wish it placed on the statute books must convince these representatives in both branches of the legislature and the governor that this is what Virginia needs. In order to accomplish this end in every county, the local profession should interview each representative before he leaves for the legislature. In this interview there should be placed before delegates in convincing manner Virginia's need for advanced and modern medical teaching and training; it should be urged upon the representatives, the wisdom of adopting the recommendations of the Commission's report in order that this may be brought about.

The duration of the session of legislature is not long. This interest which is felt by the physicians throughout the State should be shown throughout the duration of the session or, at least, until the recommendations are adopted. So let the members of the Society keep in touch with the legislature while they are at work. Let the daily mails inform them of the wishes and convictions of constituents in the profession and the laity on this matter. Often arguments received in personal letters from constituents "back home" are more po-

tential than arguments brought forward in debate on the floor. Do not forget the representative is at work away from home and is glad to know what his constituents want. A silent constituency is often a very unsatisfied one; a persistent and determined constituency usually gets the best service and greatest degree of representative government. Fundamentally, this is a question which is to be settled by opinion expressed by vote. The representatives in doubt will act upon opinion formed from what the majority of the doctors of Virginia think and believe on this important question.

The doctors of Virginia in all its history have never so squarely and urgently taken up a State problem as they have this one. They are not satisfied with what Virginia is doing, especially so, when they know she can do a great deal better with what she has. They feel the time has come for a better day in medical education and training.

The General Practitioner and the State Medical School.

Every active practitioner of medicine in Virginia feels the need of a better state-supported medical school. A doctor should never get through studying medicine; the Virginia doctor is daily brought face to face with conditions which are influenced by our present status of inadequate medical educational facilities, he is daily in need of things that are found about a great medical school, equipped and manned for the best service in medical education. It is of vital interest not only to the young men who are to be trained in Virginia in medicine to have the best medical school that it is possible to have, but also to medical practitioners who are now engaged in active practice. The general practitioners of the Commonwealth feel a need for a greater intimacy with an establishment of modern medical teaching. These active practitioners feel the need of post-graduate touch with the scientific forces and clinical agencies that enter into the training of men for the medical career. "Going to medical school" is a habit that practitioners of the State may acquire and enjoy when our medical school is big enough and efficient enough to offer them advantages in their work among the sick. The clinical advantages and hospital layout of a big State supported medical school should be such as

to attract to its clinics and help in difficult cases the medical practitioners as well as to educate medical students.

An aroused sentiment calls for such a new adjustment in the medical teaching in Virginia. This new order of things as recommended by the Medical Commission, will tend to bring the best resources of this State to this end under the control and direction of our University.

See what the Medical Commission recommended for the solution of this problem, thereby bringing Virginia's medical school with its laboratories, clinics and hospital facilities to the highest state of efficiency, most favorably located for its great mission:

1. There should be one State-supported medical school.
2. It should teach medicine, dentistry and pharmacy.
3. It should be located in Richmond.
4. This school should be formed by the merger of the Medical College of Virginia with the medical department of the University of Virginia through the unconditional transfer of the property of the Medical College of Virginia subject only to the existing liabilities.
5. The medical school so formed should be a bona fide department of the University of Virginia having the same academic relationship to the University of Virginia as that borne by the present department of medicine and the task of organizing this new school in all its departments should be entrusted to the authorities of the University of Virginia.

Dismemberment or Extension?

RESOLUTION OF THE BOARD OF VISITORS, MEDICAL COLLEGE OF VIRGINIA, UNANIMOUSLY
ADOPTED SATURDAY, MAY 14, 1921.

Whereas, the Commission on Medical Education in Virginia, created in pursuance of the terms and provisions of an Act of the General Assembly of Virginia, passed at its last session, has made a careful and exhaustive investigation of the needs of the State as regards medical education, and has recommended to the Governor and to the respective boards of the University of Virginia and of the Medical College of Virginia (both State-supported institutions) that the State will be served best by an amalgamation of the two institutions as the Medical Department of the University of Virginia, and that this department should be located in Richmond; and,

Whereas, this Board realizes that the establishment of the Medical Department of the University of Virginia in this city will make

available to it a wealth of clinical material which can never be had at Charlottesville, even at enormous cost, and will also make available to it for its faculty the distinguished specialists and practitioners of this city, thereby insuring to the University a great medical school, which would include pharmacy and dentistry; and,

Whereas, the Medical College of Virginia owns college buildings and hospitals recently appraised at over \$1,000,000.00, and, after deducting all liens thereon, worth more than \$800,000.00; and,

Whereas, in order to promote medical education, and relieve suffering humanity, this Board is willing to convey, unconditionally, all of its property to the Rector and Visitors of the University of Virginia, if the report of the Commission on Medical Education in Virginia be approved; therefore, be it

RESOLVED (1) That we heartily approve and endorse the findings of the Commission on Medical education in Virginia, and will do all in our power to have the said report ratified and approved.

(2) That, upon its approval, we will convey, unconditionally, to the Rector and Visitors of the University of Virginia all of the property of the Medical College of Virginia.

THE UNIVERSITY OF VIRGINIA IS GIVEN ENTIRE CONTROL OF THE MEDICAL SCHOOL IN RICHMOND, AND

(1) All of the property of the Medical College of Virginia will be transferred to the University.

(2) The Board of Visitors of the Medical College of Virginia will be entirely superseded by the Board of the University.

(3) Every member of the Faculty of the Medical College of Virginia, including Schools of Medicine, Dentistry and Pharmacy, will resign their positions, thus leaving the Board of the University absolutely unhampered in reorganizing Medical, Dental and Pharmaceutical Education in the State.

From the foregoing, is it right to call the proposed change a dismemberment of the University of Virginia?

News Notes

Heartly Christmas Greetings and Best Wishes for a Happy New Year.

The Congress of the American College of Surgeons

Held its annual meeting in Philadelphia, October 24-28, under the presidency of Dr. John B. Deaver, Philadelphia. Several hundred and nineteen surgeons from all parts of the country were inducted into the college by the president. A research academy, as a monument to American surgery and a tribute to the late Dr. John B. Murphy, will be erected in Chicago on a site adjoining the present home of the college. The \$500,000 necessary for this purpose will be raised by the college in conjunction with the residents of Chicago. A large amount of this sum was pledged at the Philadelphia meeting.

At the closing session, Dr. Cushing, of Harvard University, introduced the delegation from the Royal College of Surgeons of Ireland, who attended the Congress in order to confer honorary degrees on Drs. W. J. and C. H. Mayo, Rochester, Minn.; George E. Brewer, New York; A. J. Ochsner, Chicago; George Crile, Cleveland; W. W. Keen and Richard Harte, Philadelphia; and John M. T. Finney, Baltimore.

Boston was selected as the next place of meeting and Dr. Harvey Cushing, of Boston, was elected president.

The American Public Health Association

Held its semi-centennial meeting in New York City during the week of November 14, under the presidency of Dr. Mazyck Ravenel. Among the measures endorsed by the Association was the movement to establish the Gorgas Memorial Institute of Tropical and Preventive Medicine in Panama City, in memory of the late Surgeon General William C. Gorgas. The feature of the meeting was the banquet at Hotel Astor in honor of Dr. Stephen Smith, founder of the Association. In spite of the fact that he is nearing the century mark in age, he addressed the company for half an hour. Dr. Allan J. McLaughlin, of the U. S. Public Health Service, was elected president, and Mr. A. W. Hedrich was re-elected executive secretary.

Dr. E. C. Levy, director of Public Welfare

of Richmond, was among the members from this State who attended, and he was re-elected a member of the board of directors.

Salvarsan Adulterators Receive Prison Sentences.

The salvarsan adulterations in Germany and other countries, which caused so much difficulty in the drug markets during 1919 and 1920, were recently taken up by the Criminal Court of the County of Hamburg. After a trial lasting fourteen days, in which many experts were examined, the manufacturer, Gerloff, and his superintendent, von der Heyde, were sentenced to three and one-half years in prison and to five years disenfranchisement. Sixteen defendants received two-year prison sentences each, and sixty-two others who had conducted a flourishing business in adulterated salvarsan were fined 20,000 marks. Six persons were acquitted.

Those convicted of adulteration had manufactured and sold a yellow powder from substances which were not only worthless but dangerous to health. It bore a striking resemblance to the genuine salvarsan and the labels and packing were so perfect an imitation of the genuine Hoechst product that it could easily be mistaken for the genuine even by physicians. The convicted men made a large amount of money by handling these adulterated products as they were selling this stuff at a time when raw materials were scarce and the entire world was crying for the genuine German product, and it was easy to find purchasers.

The judge in his charge to the jury condemned the unscrupulousness by which the defendants had endangered the lives of their fellow-men for the sake of greed and he asserted that the good name of the German industry had been injured. He felt that another grievous factor in these adulterations was that the idea had gotten abroad that German manufacturers were attempting to sell poisonous medicines for ulterior purposes and such charges had appeared in foreign newspapers. The severe punishment inflicted upon those convicted will, it is believed, put an end to further adulterations of salvarsan and will discourage possible repetitions.

Married—

Dr. John A. Shackelford and Miss Margaret Dillard Spencer, both of Martinsville, Va., November 16. Dr. Shackelford graduated

from Johns Hopkins University Medical School in 1920 and, after an internship in Baltimore, recently returned to Martinsville where he is associated in practice with his father, Dr. J. M. Shackelford.

Dr. William Lee Cowles, Boston, Mass., and Miss Mary Agnes Terrell, Birmingham, Ala., November 26. Dr. Cowles is from James City County, this State, and was graduated from the Medical College of Virginia in 1908.

Dr. Charles Walker Putney, Darlington Heights, Va., and Miss Louise Anne Gathright, Richmond, December 3. Dr. Putney was graduated from the Medical College of Virginia in 1921 and received an appointment to the Grace Hospital, New Haven, Conn.

Maternity Bill Passed by Congress.

The Sheppard-Towner bill, providing for Federal co-operation with the states in promoting the welfare of maternity and infancy, was recently passed by Congress and the bill was signed by President Harding on the day before Thanksgiving. The Federal appropriation has to be supplemented by an appropriation by the State receiving this aid. A few states have already signified that they will avail themselves of the Federal appropriation. Much has been said for and against this measure but it remains for time to prove its worth.

Dr. U. G. Jones,

Recently of Marion, Va., has located in Johnson City, Tenn., where he will limit his practice to diseases of the eye, ear, nose and throat.

Dr. Horace G. Longaker

Has been appointed assistant health officer of Newport News, Va., succeeding Dr. M. W. Sinclair, resigned.

Dr. Marion Edmond,

Recently of Millboro, Va., advises that he has located at Eagle Rock, Va.

Dr. Manfred Call,

Of this city, recently enjoyed a hunting trip with Dr. Perkins Glover and others in Buckingham County, Va.

Norfolk Protestant Hospital Receives Gift.

At the November meeting of the Board of Directors of the Norfolk Protestant Hospital, it was announced that a \$10,000 gift had been made to the endowment fund of the hospital. This is for the purpose of endowing two memorial cots, one in memory of Mrs. Louisa

Taylor Letcher, a former most generous supporter of the hospital.

Dr. J. F. McClellan,

Who has for a time been located at Eckman, W. Va., returned to Kenbridge, Va., the middle of November, and is associated with Dr. T. C. Harris in the operation of the Harris Hospital at that place.

Dr. D. L. Kinsolving

Has returned to his home in Abingdon, Va., after spending some time at Baggs, Wyo.

Dr. W. M. Burwell,

Who has for some time been located at Chincoteague, has moved to Dickson Building, Norfolk, Va., and is associated in practice with Drs. B. M. Baker and G. R. Berkeley.

Dr. Baruch Mentioned as American Ambassador to Austria.

Recently, the German language papers, especially in New York, have been agitating the appointment of Dr. Emanuel Baruch as American ambassador to Austria. Dr. Baruch is a well known New York physician and has, in the past few years, been very active in promoting relief work for Austria and Germany.

New Cure Suggested For Tuberculosis.

According to the American Press Section of the Foreign Language Information Service, at the recent Congress of the American College of Surgeons in Philadelphia, Dr. H. C. Jacobaeus, professor of medicine at the Karolinska Institutet, Stockholm, demonstrated a new cure for pulmonary tuberculosis. The method is similar to artificial pneumothorax and is only available if the other lung is healthy. A trocar is introduced into the lung and a thin rod, fitted with an electric bulb is brought in. Through another trocar an electric burner is entered, which, when the lung is illuminated by the lamp, can be used to burn off all tendons and membranes, and the lung thus can wither. In consequence, the expectorated matter does not contain any more germs, the coughing comes to an end, and soon the patient recovers his health. Dr. Jacobaeus states that he has successfully used this device which he calls "thoracoscopi" in over fifty cases of pulmonary tuberculosis.

Mme. Curie Organizing Radium Institute in Warsaw.

Mme. Curie is now in Warsaw, Poland, where she has started a campaign to raise

money for a radium institute to cure cancer and she intends to remain there until her plans materialize. As the first contribution to this enterprise, she has given the \$1,000 which was given her by the Poles in Chicago, when she visited America.

Dr. John A. Patterson

Has resumed his practice in Concord, N. C., after taking a post-graduate course at the New York Eye and Ear Hospital.

An Explanation

Is due those who participated in the program of the Medical Society in Lynchburg as to discussions of papers read at that meeting. At the last minute, the expert stenographer engaged disappointed us, and we could only secure two who had no experience in reporting meetings and were unfamiliar with medical terms. For this reason, they were compelled to invent a short hand to cover the technical terms and this was not easy to decipher. No notes were received for some discussions and some of those who discussed papers have asked that their discussions be omitted as they did not recall what they said.

We feel this explanation should be made in justice to those who did what they could to help out the meeting and also to the doctors who discussed papers.

World's Congress of Anesthetists Called.

At the last meeting of the National Anesthesia Research Society it was tentatively decided to have the next meeting in October, 1922, at Columbus, Ohio, and it was decided to have this a World's Congress of Anesthetists. In view of this, invitations will shortly be sent to leading and representative anesthetists in London, Paris, Vienna, Buenos Aires, Sydney, and other world centers of importance. The 1922 meeting will be largely concerned with the subject of the teaching of anesthesia, and should prove a most interesting congress.

Pharmaceutical Education

Is a bulletin recently prepared by Mr. Wortley F. Rudd, dean of the school of pharmacy of the Medical College of Virginia, assisted by Mr. P. F. Fackenthall, also of this school, for the U. S. Bureau of Education, to be incorporated in the Biennial Survey of Education in the United States for 1918-1920. As a necessary background for this study, they give a review of pharmaceutical educa-

tion prior to 1918.

The bulletin is interesting as well as instructive, and the authors are to be congratulated upon their presentation of the subject.

Dr. Guy Kirby,

Of Marion, N. C., has been elected president of the Tenth District Medical Society of North Carolina, for the ensuing year. Dr. Kirby has numbers of friends in this State being an alumnus of the former University College of Medicine, Richmond.

Sir Andrew McPhall,

A professor at McGill University and a prominent surgeon of Montreal, was shot and severely wounded on November 15, by a man who later committed suicide.

The American Society for the Control of Cancer,

In its effort to teach the danger signals of cancer and thus reduce the incidence of this dread disease, is constantly publishing leaflets and booklets on what should be known about cancer. These may be had upon request made to the Society at 25 West 45th St., New York City. The Society does not undertake the care or treatment of individual patients, nor does it recommend particular hospitals or physicians. Those seeking such information are referred to their family physicians or the nearest reputable hospital.

Dr. John Staige Davis,

University, Va., was a recent guest at the home of Dr. Perkins Glover, Arvon, Va.

Dr. F. Wilson Gearing

Has returned to his home in Woodstock, Va., after accompanying a patient to his home in Chicago.

Dr. Charles J. Sager,

Who was recently called to his old home in Woodstock, Va., by the death of his mother, has returned to Harding, W. Va., where he is now located.

Dr. and Mrs. Samuel L. Jepson

Recently celebrated their golden wedding anniversary at their home in Woodlawn, just outside of Wheeling, W. Va. Dr. Jepson was formerly State Health Commissioner of West Virginia.

A rather unusual circumstance about Dr. Jepson's family is that his father and mother celebrated their fiftieth anniversary, one bro-

ther and wife have already celebrated their fiftieth wedding anniversary, and another brother and his wife will have been married fifty years this month.

The Christmas Seal Sale,

To raise money with which to fight tuberculosis, is now on. Last year a little over \$50,000 was raised in Virginia for this work. This year the Virginia Tuberculosis Association hopes for more, for it is estimated that more than 30,000 people in this State have the disease in some form.

One of the many ways in which the National Tuberculosis Association is combating tuberculosis is by the introduction of occupational therapy in the treatment of patients in sanatoria. This is only one of the things for which money derived from sale of the T. B. Christmas Seals is used.

It is not yet too late "to lend a hand" by buying some seals.

Dr. Thomas D. Merrick,

Of Richmond, took a motor trip to eastern Maryland early in November.

Dr. and Mrs. T. Edwin Baird,

Of Norfolk, were the recent guests of friends in Waverly, Va.

Dr. Sam Wilson,

Lynchburg, Va., was elected an officer in the Lion's Club recently organized in that city with fifty-two charter members.

Dr. H. Aulick Burke,

A prominent surgeon of Petersburg, Va., left the middle of November for Norfolk, Va., to take up his duties in the U. S. Naval Hospital there. He enters the service with the rank of senior lieutenant.

Dr. and Mrs. J. B. Hackley

Have returned to their home in Purcellville, Va., after a visit to relatives in Culpeper, Va.

The National Health Exposition,

Occupying 60,000 square feet of floor space, will be held in the Jefferson County Armory at Louisville, February 1-9, 1922. This is under the auspices of the U. S. Public Health Service, State Board of Health of Ky., Jefferson County Board of Health and the Health Department of the City of Louisville. It will include exhibits in hospitalization, nursing, dentistry, medicine and pharmacy. The

University of Louisville, the public school system, and various local, state and national health organizations will participate.

The annual conference of the city and county health officers, the annual convention of the Kentucky State Public Health Association and other health meetings are already scheduled in connection with the Exposition.

An institute will be conducted by the U. S. Public Health Service and its program will include many prominent speakers.

Expenses will be paid through the sale of commercial exhibit space to a limited number of reputable firms.

Dr. and Mrs. E. J. Nixon,

Petersburg, Va., recently enjoyed a motor trip to Washington, D. C.

Dr. G. E. Barksdale,

Who resumed his practice in Richmond after returning from service in the World War, is now connected with the U. S. Public Health Service, and is stationed at Hospital No. 41, New Haven, Conn.

Dr. D. Hunter Marrow,

Union Level, Va., has left for Daytona, Fla., where he expects to spend the winter season.

Sir Harold Stiles,

Regius professor, University of Edinburgh, has been visiting his fellow graduate, Dr. Tom Williams, of Washington, D. C. Sir Harold came to America to give the convocation address before the American College of Surgeons and, since being in this country, has visited several of the chief surgical clinics.

Dr. S. E. Weymouth,

President of the Callao State Bank, and Mrs. Weymouth, of Callao, Va., have returned home after spending several months touring the Rocky Mountains and California.

Wanted Assistant Bacteriologist.

Usual starting salary, \$1,800 a year. Parts and weights in tests: Education and experience, 4; thesis, 3; personal interview, 3. Education equivalent to that represented by graduation in chemistry or bacteriology from a university of recognized standing, either post graduate work in bacteriology or successful experience in bacteriological research work required. This is a non-assembled ex-

amination. Competitors will be allowed to prepare a thesis on an assigned technical subject and a statement of education and experience at their homes. Those who receive a rating of 70 per cent or more on these parts will be assembled later at Baltimore for a personal interview. Address, State Employment Commission, 22 Light Street, Baltimore, Md.—(Adv.)

Wanted

To buy a second hand pair of Marshall Saddle Bags. Any one wishing to dispose of a pair please communicate with "T. F." care this journal.

Obituary Record.

Dr. B. Lawrence Taliaferro,

Chief physician of Catawba Sanatorium, died in Roanoke, Va., November 21, aged 44 years. Last summer, after undertaking a large amount of clinical work in addition to his sanatorial duties, his health gave away, and the State Board of Health gave him a six months' vacation, with the hope that he might regain his health.

Dr. Taliaferro was graduated from the Medical College of Virginia, Richmond, in 1898 and had held many offices of trust since his graduation. Upon completion of his internship at Old Dominion Hospital, this city, he took a special course in post-graduate work at Johns Hopkins University and in Germany after which he returned to Richmond. He was then connected with the adjunct faculty of the Medical College of Virginia in various positions until he resigned and went as a patient to Catawba Sanatorium, in 1913. Later he served on the staff of the Trudeau Sanatorium, at Saranac, N. Y., and later as assistant at Catawba. He became chief physician at the last named place in 1916. He was for a number of years a member of the Medical Society of Virginia. Dr. Taliaferro was a native of this city and the interment was made in Hollywood Cemetery, Richmond. He is survived by his widow and three daughters.

As medical director of Catawba Sanatorium, Dr. Taliaferro came into close personal contact with hundreds of sufferers from tuberculosis, and his self-sacrificing spirit, unfailing sympathy, and devotion to duty, made him

one of the best loved men in the State and an ideal director of such an institution.

Resolutions on Death of Dr. Taliaferro.

The following resolutions and preamble were adopted at a meeting of the Richmond Academy of Medicine and Surgery held on November 22, 1921.

Whereas, The Academy of Medicine and Surgery has heard with sincere regret of the death of Dr. B. L. Taliaferro, and,

Whereas, Dr. Taliaferro in the history of his career has been an ornament to the profession, a self-sacrificing and devoted minister in the relief of human suffering, therefore, be it

Resolved, That this Academy desires to place on record its sense of loss in the death of Dr. Taliaferro to the profession and humanity, so early in life, and

Resolved, That this preamble and these resolutions be placed on record, that a copy be sent to his family, and that they be published in the Virginia Medical Monthly.

Signed

J. N. Upshur,
G. C. Woodson,
J. P. Roy.

Resolutions on Death of Dr. H. H. Levy.

On October 18, 1921, Dr. Henry H. Levy died and, with his death, passed one of the prominent members of the medical profession in Richmond. He came of a distinguished line who have always been associated with the welfare and upbuilding of Richmond. He was the son of Jacob A. Levy and Martha Ezekiel, and was born December 27th, 1850. His father was one of the prominent merchants of the city and his mother an aunt of the famous sculptor, Moses Ezekiel. On March 1, 1888, he married Miss Gertrude Hahn, of Philadelphia, Penn., who with two children survives him. He received his academic education in Richmond and graduated from Richmond College in 1868 with the degree of B. A. He then took up the study of medicine and graduated from the Medical College of Virginia, February 28, 1871, following which he went to New York for his clinical service and later to Philadelphia where he had a service of two years at Blockley Hospital.

He returned to Richmond in 1873 to enter into the practice of medicine. In 1876 he became identified as a teacher in his Alma Mater, the Medical College of Virginia, and this association continued until the time of his death. During this time he taught in most of the important branches of the College, as is shown by the following record:

Adjunct on Surgery 1876-1880.

Clinical Lecturer on Minor Surgery 1880-1881.

Assistant to the Professor of Diseases of Women and Children 1881-1883.

Professor of Physiology and Pathology 1883-1893.

Professor Physiology and Lecturer Med. Jurisprudence and Hygiene 1893-1897.

Professor Physiology and Lecturer Diseases Nervous System 1898-1899.

Professor Practice of Medicine 1899-1904.

Emeritus Professor of Practice and Lecturer Diseases Nervous System 1904-1912.

Emeritus Professor of Practice from 1912 until date.

While his experience was a varied one, it was as a clinician that he did his best work and for which he became best known. The painstaking care

with which he analyzed a case enabled him to reach the true nature of the malady, and gave him a reputation for exact and scientific diagnosis.

About 1880 he was elected President of the Richmond Academy of Medicine, which in 1890 was fused with the Richmond Surgical Club forming the present Richmond Academy of Medicine and Surgery. As a practitioner of medicine he became known as one of the leading doctors of the city and State and enjoyed a large clientele which embraced many of the leading families of this City.

The most distinctive points of character that differentiated Dr. Levy from most people were the painstaking care that he exercised in coming to an opinion and the tenacity with which he held to the opinion after decision had been reached, his strict integrity and honesty in both thought and action. His tender feelings towards everyone, particularly the suffering, were marked by a brusqueness of speech and a decisive manner. Everybody respected him. Those that knew him loved him.

Since 1891 he has been an ill man and practised his profession under great disadvantages. He bore his suffering with fortitude.

Because of the fact that Dr. Levy has left such an impression upon the minds and character of his pupils, that he has been such a wise counselor to both the sick and the members of his own profession, and that he has led a life that can be such an example to each and every one of us,

Be it resolved: That the Richmond Academy of Medicine and Surgery has lost in his death a wise counselor and the members a sincere friend.

Be it further resolved: That a copy of these resolutions be spread upon the minutes, published in the *Virginia Medical Monthly*, and that a copy be sent to the bereaved family, to whom we tender our deepest sympathy.

Signed

CHAS. R. ROBINS, Chairman.
D. MEADE MANN,
GREER BAUGHMAN.

Dr. Daniel Castillo,

Graham, Va., died at a Bluefield, W. Va., hospital, October 22, from a bullet wound in the brain, presumably self-inflicted. He was about thirty years of age and a graduate from the Medical College of Virginia, Richmond, in 1916. He joined the Medical Society of Virginia shortly after graduating.

Dr. Charles T. McClintock,

A former member of the Medical Society of Virginia, but who has recently made his home at Sarasota, Fla., died in Jacksonville, Fla., October 22, aged 61 years. He graduated in medicine from the University of Michigan, Ann Arbor, in 1894.

Dr. Cary Breckenridge Gamble

Died November 8, at the home of his daughter near Baltimore, Md. Dr. Gamble was a native of Virginia, having been born in Boteourt County, 96 years ago. He was a graduate in medicine from the University of Virginia.

Fifty-third Annual Session, Norfolk, Va., October, 1922

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Original Communications

PULMONARY TUBERCULOSIS AND SYPHILIS.*

By H. G. CARTER, M. D., Burkeville, Va.
Superintendent Piedmont Sanatorium.

With two infections as widely distributed as are syphilis and tuberculosis one would naturally expect to find a great number of cases in which the two coexist. This number is even greater than would be natural on account of the increased percentage of tuberculosis in those of irregular habits where we naturally find the greatest percentage of syphilis.

Hollander and Narr¹ quote from Vedder, Day and McNutt showing the coincidence of these two diseases.

COINCIDENCE OF TUBERCULOSIS AND SYPHILIS.

Investigation	No. of Patients	No. Positive	No. Probably Syphilis	Positive Percentage	Total Percentage
Litttle, Bergeron & Lepine.....	346	64	—	19.0%	19.0%
Vedder	211	36	17	17.0%	23.2%
Snow & Cooper	290	44	14	14.0%	20.0%
Lyons	471	29	12	6.2%	9.2%
Jones Dispensary	251	0	73	0	29.0%
Jones Hospital	189	18	0	11.0%	25.0%
Petroff	376	0	82	0	21.8%
Ford	328	6	22	2.0%	8.0%
Collectanea	175	14	9	8.0%	13.1%
Cooper	2794	181	0	6.5%	6.5%
Day and McNutt	893	102	107	11.3%	23.4%
	6324	494	336	10.36%	17.81%
To these we add our own figures:					
Piedmont Sanatorium	817	66	0	7%	7%
	7141	560	0	7.8%	12.5%

These tables will give some idea of the extensive overlapping of the two infections. A comparison of opinions regarding the effect on the prognosis in the coexistence of the two diseases is interesting but is not within the scope of this paper; suffice it to say that the bulk of opinion is that the coexistence of the two infections renders prognosis more grave. There are some notable exceptions to this opinion of the majority however, some going so far

as to contend that when a tuberculous infection is grafted on an old syphilitic the course of the disease is rendered more mild.²

That the percentage of the coexistence of the two infections is high is generally conceded, but the majority of medical opinion today is that syphilis of the lung is rare. This is especially true of text-books written prior to 1915, and it is interesting to note that all quote from three or more of the same sources in support of the contention that this disease is rare. Fishberg,² Landis,³ Barker⁴ and others, quote more or less from the following data:

Osler⁵ in John Hopkins Hospital found twelve instances in 2,500 autopsies.

Fowler⁶ was able to find only twelve in all the London Museums.

Of 6,000 cases of syphilis at Copenhagen only eighteen cases of syphilis of the lungs are recorded.

Peterson² among 88 autopsies found 11 cases of syphilis of the lungs.

Of 3,000 autopsies performed at Massachusetts General Hospital³ one case is recorded.

Symons³ found twelve cases in 4,880 autopsies, 314 of whom were syphilitic.

It will be noted that practically all of this work was done prior to the days of either the Wassermann blood test or salvarsan treatment. In some of the cases the final diagnosis is made only after the symptoms observed during life are considered in connection with the lesions discovered post mortem. Examinations must show tubercle bacilli in sputum and tubercle in lung absent and syphilitic lesion must be found in other organs in order to confirm a diagnosis according to the rules of Fowler. There are possibly other pathologists not so exacting, but I find not one recording a fibrous scar as even probably syphilitic unless supported by other evidence.

What is the lung pathology of Syphilis of Lung? Landis classifies as: (1) Gummatous; (2) Fibroid induration; (3) Consolidation and catarrh. He says the gummata may

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

become entirely healed, leaving behind a dense mass of puckered scars which cannot be distinguished from similar scars produced by tubercle or abscess. Of the fibroid induration he has this to say, "This takes the form of an extensive cellulous infiltration until the whole mass is converted into a dense fibrous tissue: when this stage is reached the picture is that of pulmonary fibrosis. How frequently syphilis is the exciting cause of a diffuse pulmonary fibrosis is problematical." The catarrhal form occurs in the secondary stage of syphilis, when the mucous membranes are affected, and rarely gets to the autopsy table.

Funk⁷ says "the fibrous lesions referred to syphilis do not possess any cardinal characteristics and cannot be distinguished during life from fibrosis due to tuberculosis and other cases." Autopsy evidences may even be inconclusive. Funk quotes Downing as saying that difficulty in distinguishing between the several maladies causing fibrosis makes our autopsy records show so few cases of specific lung disease. Funk is of the opinion that syphilitic lung lesions may clear up just as skin syphilis.

Powell and Hartley comment on Fowler's findings in the same light, that specific lung disease does not necessarily leave pathognomonic lung pathology for the autopsy. Possibly the most common manifestation of lung syphilis is fibrosis, yet on account of the supposedly rare occurrence of this form of syphilis and on account of the wide prevalence of tuberculosis of the lung, no pathologist will call a post mortem fibrous lesion syphilis unless supported by negative tuberculosis history and findings, or positive clinical evidence of syphilis during life supported by post mortem evidence of syphilis in other organs or both.

"Vedder⁸ quotes Brock who reports on an examination of 7,660 South African natives among whom tuberculosis was unknown at that time. Brock comes to the conclusion that 35 per cent. of all natives have a fibroid condition of the lungs: 68 per cent. have indurated enlargement of epitrochlea glands. Both conditions result from syphilis, and nearly 80 per cent. of natives have one or both conditions. He concludes that syphilis plays an important role in the production of lung disease of young and old."

We have abundant evidence that lesions of

syphilis *may* exist in the lung. The proof of the frequency of the occurrence rests on proving beyond question that the fibrous scar is caused by syphilis, otherwise the lesion will be characterized as tuberculous on account of its more frequent occurrence. And yet we have proof that syphilis may produce a fibrous lesion of the lung.

Landis,³ Funk,⁷ Gibbs,⁹ and other current writers, are of the opinion that syphilis of the lung occurs more frequently than it is diagnosed. One notes recorded cases in the literature more frequently than any other non-tuberculous chronic disease of the lung.

Marino,¹⁰ from South America, notes the improvement in lung diseases under specific treatment in those of "robust parents free from tuberculosis."

Barlaro,¹¹ from South America, reports three cases of advanced lung diseases improving under specific treatment.

Sorensen,¹² from South America, had occasion to change his diagnosis in seven instances from pulmonary tuberculosis to syphilis.

Funk⁷ found four instances in seventy-two non-tuberculous lesions of chest.

Gibbs⁹ records seven.

Minton¹³ notes instances of improvement following specific treatment.

Landis reports three cases from the records of Phipps Institute and two from White Haven Sanatorium.

In all these cases the diagnosis rests on the therapeutic test which is, after all, the final proof. In most instances attention was directed to syphilis by a positive Wassermann in a lung lesion with negative sputum.

In some of them X-ray plate of chest helped confirm diagnosis even before the therapeutic test was applied.

Funk quotes Watkins as saying that the belief that syphilis of lung is rare is based on a misconception, namely that it always occurs as large gumma or multiple small gummata. He classifies syphilitic lung lesions according to roentgenographic shadows as follows: (1) Syphilitic consolidation in which the roentgenogram presents a massive shadow involving the entire lobe or a large portion contiguous to the mediastinum and diminishing in density towards the periphery; (2) Early diffuse sclerosis in which the picture is that of an evenly distributed lineal marking

radiating, or a speckling throughout lung, sometimes bilateral; (3) Dense sclerosis with a characteristic pyramidal shadow with base at hilum and with lance like projections into lung substance. These classifications correspond to Landis's anatomical classifications.

The evidence of syphilis in our own cases is not supported by X-ray findings but rests on the therapeutic test. In 817 cases admitted to date we have had positive for syphilis by the Wassermann test 66, of whom 15 showed negative sputum. Forty-two were treated for syphilis after showing no improvement under the normal rest-hygienic treatment for tuberculosis; 34 of those treated showed positive sputum and, are, therefore, excluded from this report. Some improvement was noted, however, in several instances in those cases with positive sputum and positive Wassermann. Marked exacerbation was noted in a number of cases of positive Wassermann and positive sputum, this being mainly in the advanced cases and especially those with throat lesions. Our report concerns those with negative sputum and positive Wassermann who showed no improvement under routine treatment. There are nine of these cases detailed as follows:

CASE No. 200. Age, 39. Occupation, housewife.

Chief Complaint.—Cough and languor.

Family History.—Negative for tuberculosis.

Past and Present History.—Loss of weight, cough and hemoptysis noted two years prior to admission. Previously healthy. No past history of syphilis or tuberculosis.

Symptoms.—Objective and subjective upon admission. Languor, dyspnoea upon exertion, daily temperature 100.1, cough with scant expectoration, indigestion and hemoptysis.

Findings—Chest.—Whispered voice and broncho-vesicular breathing and persisting moist rales after cough from second to sixth rib front and third to seventh vertebral spine behind, right lung.

General Examination.—Typical syphilitic skin lesions noted on forearms and legs.

Laboratory Report.—Sputum negative six examinations. Wassermann 4-plus.

Clinical Record.—Patient continued to show an irregular afternoon or morning temperature to 100 degrees F. for two months. No change in signs or symptoms. Referred for

syphilitic treatment and readmitted to sanatorium four months later.

Chest Findings.—Right lung, whispered voice and broncho-vesicular breathing at apex, no rales after cough, temperature normal. During next four months patient gained twenty pounds in weight. Discharged with no symptoms other than a slight cough.

CASE No. 597. Male. Age, 12 years. Occupation, pupil.

Chief Complaint.—Cough, hoarseness, general debility.

Family History.—Negative for tuberculosis.

Past and Present History.—Present condition began six months prior to admission with hoarseness and dyspnoea. Tonsils burned out with no improvement in throat condition.

Symptoms.—Objective and subjective upon admission, marked dyspnoea upon exertion, constant cough with frothy expectoration, daily temperature to 100.5, partial blindness and deafness.

Findings—General.—Discharging right ear, iritis and keratitis both eyes, throat congested, cords markedly indurated, general appearance markedly emaciated. His appearance as a whole being that of a hopelessly advanced case of tuberculosis.

Chest.—Rapid and irregular heart. Left lung, whispered voice, broncho-vesicular breathing and fine moist rales, after cough, over entire lung. Right lung shows same findings in upper lobe.

Laboratory Report.—Sputum negative on nine examinations, Wassermann 4-plus.

Clinical Record.—Patient continued to show a temperature of 100 to 100.6 for six months, no change in signs or symptoms at the end of that time. Syphilitic treatment given. In the next six months patient ran a normal temperature, gained fifteen pounds in weight, eye and throat conditions markedly improved. The hoarseness which had prior to treatment amounted to complete loss of voice improved so markedly that patient was singing before leaving sanatorium. Final examination of lungs showed some areas of whispered voice and no moist rales after cough.

CASE No. 210. Male. Age, 32. Occupation, Hotel waiter.

Chief Complaint.—Nervousness, loss of appetite and pains in chest.

Family History.—Negative for tuberculosis.

Past and Present History.—Peritonitis four years ago, appendicitis with appendectomy two years ago, hemorrhage two months after operation. Had lost fifteen pounds in weight in two months prior to admission.

Symptoms.—Subjective and objective upon admission. Loss of appetite, nervousness and pain in chest.

Findings—General.—Appearance that of a fairly well nourished individual.

Chest.—Well defined lesion noted at base of left lung.

Laboratory Report.—Sputum negative for tubercle bacilli six examinations. Wassermann 4-plus.

Clinical Record.—Patient remained in sanatorium two months, temperature normal during the entire stay, continued to lose weight and complain of nervousness, the symptoms of nervousness being so marked that he was referred elsewhere for syphilitic treatment. No later record.

CASE No. 452. Male. Age, 25. Occupation, Soldier.

Referred to us by an alienist with the following examination card, "I have examined J. C. and in addition to his tuberculous trouble he has evidence of cerebral spinal syphilis. I do not believe at present his condition is dangerous and I recommend that he be sent to a sanatorium for treatment for tuberculosis."

Symptoms.—Slight cough with scant expectoration, extreme nervousness, hallucinations, irregular temperature at intervals to 101.

Findings—General.—Examination showed a fairly well nourished individual showing definite signs of mental disease.

Chest.—Examination showed definite lesion at apex of right lung.

Laboratory Report.—Sputum negative for tubercle bacilli on twelve examinations. Wassermann positive for syphilis.

Clinical Record.—Patient continued to run an irregular temperature and referred for treatment on account of unruliness.

CASE No. 448. Female. Age, 17 years. Occupation, Student.

Family History.—Negative for tuberculosis.

Past and Present History.—Negative.

Chief Complaint.—Cough with scant expectoration,

picked up in examination at a public clinic.

Findings—Chest.—Definite lesion between third and sixth rib front in left lung.

Laboratory Report.—Negative for tubercle bacilli on twelve examinations, Wassermann positive for syphilis.

Clinical Record.—Patient showed an irregular afternoon temperature to 99.6 during entire two months' stay in sanatorium. Discharged unimproved, refusing syphilitic treatment.

CASE No. 398. Male. Age, 30. Occupation, Hospital cook.

Family History.—Negative for tuberculosis.

Past History.—Patient acknowledged venereal infection. Had been cooking in tuberculous ward of an army hospital prior to admission.

Chief Complaint.—Cough and streaked sputum.

Findings—General.—Examination showed a well developed muscular individual.

Chest.—Right lung, marked broncho-vesicular breathing and whispered voice to fourth rib front and fourth vertebral spine behind. After cough no rales.

Clinical Record.—Patient showed marked cough with scant expectoration, hemoptysis at intervals, temperature normal. Syphilitic treatment given and cough and expectoration entirely absent. Gained fifteen pounds in weight. Chest examination same as previous.

CASE No. 706. Female. Age, 39. Occupation, Housewife.

Family History.—Negative for tuberculosis.

Past and Present History.—Present condition began three years ago following influenza with cough and night sweats.

Chief Complaint.—Cough with scant expectoration, temperature to 100, dyspnoea upon exertion, loss of appetite and languor.

Findings—General.—Fairly well nourished.

Chest.—Moist rales at apex of both lungs, pleural rub at base of right lung.

Laboratory Report.—No expectoration, Wassermann positive for syphilis.

Clinical Record.—During first two months' stay patient showed daily temperature 99.2 to 100.4. Complained of feeling bad generally, no appetite. Chest findings at the end of two months same. Patient given syphilitic treatment. Temperature normal in three weeks. Patient gained eight pounds in weight; all

symptoms improved. Discharged at the end of six months, saying she never felt better in her life.

CASE No. 687. Male. Age, 40. Occupation, Laborer.

Family History.—Negative for tuberculosis.

Past History.—Positive for syphilis.

Chief Complaint.—Cough and constipation.

Symptoms.—Subjective and objective, marked cough with scant expectoration, languor, dyspnoea upon exertion, irregular temperature 99.2 to 101, constipation and rectal tenesmus.

General Observations.—Well nourished individual. Rectal examination stricture of rectum.

Chest.—Medium moist rales from apex to base left lung. Referred to proctologist and for syphilitic treatment. Upon readmission four months later, chest examination showed no rales in left lung, general condition markedly improved. Temperature normal. Kept in sanatorium two months and gained rapidly in weight. Only complaint constipation with some rectal tenesmus.

CASE No. 327. This case is not included in this series on account of the fact that he was reported positive for tubercle bacilli on one laboratory report. He had been kept in the sanatorium as a segregated case for over a year, with all the signs and symptoms of a far advanced case of tuberculosis. When it was noted that in spite of his advanced lesion the laboratory reports were negative for tubercle bacilli except on one occasion and that blood test was positive for syphilis, it was decided to try syphilitic treatment. In the next six months he gained some thirty pounds in weight, showed a normal temperature and was discharged from sanatorium as quiescent. This was two years ago and he is at present working eight hours a day with no return of his trouble.

While there were no sets of symptoms that would distinguish these cases from cases of pulmonary tuberculosis in the same ward, we did note in the advanced lesions symptoms to be less severe than would be expected from similar tuberculous lesions. In all cases, mild and severe, the slow progression of the disease was noted in comparison with other cases with positive sputum. Scant expectoration and irregular temperature were also observed in the majority of cases as was hoarseness. This all

represents hindsight and not foresight. I seriously doubt that without a negative sputum and positive Wassermann report from laboratory, we would have noted any symptoms in this group of cases to distinguish them from cases of pulmonary tuberculosis and would have continued to treat them for pulmonary tuberculosis to the detriment of the individual. In every case in which syphilitic treatment was given, marked improvement was noted in signs, symptoms and general appearance, and this improvement was too marked and followed treatment too rapidly to be accounted for in any other way than through the syphilitic treatment.

In chest findings we did not note that the bases were involved any more frequently than the apices. In some instances a clear cut lesion was noted in middle of lung, in others at base, but lesions at apex are also included in this series. This fact is noted by others. The rule that apical lesions are classed as tuberculous and basal lesions non-tuberculous until otherwise proved, rests on the preference shown by tuberculous lesions for apex and not on account of preference of non-tuberculous lesions for base, this is certainly true of syphilis.

CONCLUSIONS.

Through the therapeutic test we have demonstrated that syphilis of the lung is not so rare as text-books would have us believe. If this conclusion is not logical, then the equally important fact has been demonstrated that syphilitic treatment is of decided benefit to certain cases of pulmonary tuberculosis and it is most significant that these cases show negative sputum and positive Wassermann.

There are no pathognomonic signs or symptoms of pulmonary syphilis. X-ray findings are possibly helpful in a certain percentage of cases according to recorded literature; this has not been verified by us. The final diagnosis rests on improvement under syphilitic treatment in those cases showing negative sputum and positive Wassermann.

Finally, salvarsan and mercury can be administered safely to those cases of syphilis complicated with tuberculosis if the disease has not reached an advanced stage. The effect on the course of tuberculosis in the majority of these cases is beneficial. Iodides can not be used. In the far advanced lung lesions with positive Wassermann and negative sputum,

marvelous cures can be had in some cases by the mixed syphilitic treatment which is justified in all such cases.

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DISCUSSION.

Dr. Chas. R. Grandy, Norfolk: I wish here to express my appreciation of the splendid work Dr. Carter has been doing at Piedmont Sanatorium, both in the care of his patients and in taking advantage of the opportunity offered him to do original work. As you all know, he is in charge of the first state sanatorium built to treat tuberculosis in the Negro, and consequently, has various problems to solve which do not arise in the white sanatoria. The differentiation between syphilis and tuberculosis of the lungs is of especial interest, as it has long baffled the clinician, and is still being discussed in a hazy way in the journals. Clear cases, like those just presented by Dr. Carter will do much to elucidate this subject.

THE CHILDREN'S PSYCHOPATHIC CLINIC OF THE MEDICAL COLLEGE OF VIRGINIA.*

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and
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In this paper we will simply attempt to introduce to the medical profession of Virginia the subject of a psychopathic clinic for children and young adults of the schools, courts and charitable organizations of the State of Virginia and City of Richmond. It is in no sense

our aim, at this time, to report anything other than a resume of our work. We believe that our effort is beginning to bear fruit and we expect at a later date to report more complete results.

The object of the Medical College of Virginia in conducting this department of its dispensary is to fill a gap in its clinical teaching of neurology and psychiatry and to round out its usefulness in the State and city. Our purpose is to sort these unfortunates according to their respective medical, intellectual and moral classification and to cause energy to be directed along the proper line, so that much time, money and needless labor will be saved to all concerned in their care. It might be of interest to know that this clinic is the only one of like character anywhere in the entire State.

The clinic was established six or seven years ago by the School Board of Richmond for the benefit of school children only. It was conducted in the dispensary of the college under the chair of medicine. Beginning with the session of 1920-21, it was put where it rightly belongs—under the chair of neurology and psychiatry. It has, during its history, developed, widened its scope and opened its doors to all those whose minds are not developing normally.

One of our main objects in this clinic is the instruction of medical students. Along this line we feel that we have already succeeded. Prior to the development of this department of the dispensary of the Medical College of Virginia, students had little opportunity to observe, examine and hear discussed cases of feeble-mindedness, early psychoses of childhood, constitutional inferiority and their kin. Sections of the junior class attend the clinic for a period of six weeks each. They are instructed in determining the mental age of feeble-minded patients by all the approved methods now in use, in examining and arriving at an opinion regarding the psychoses of childhood and early adult life, the emotionally unstable, the inadequate personality, the moral delinquent, and the social misfit in general. Further, they gain experience in handling these cases in regard to advice to school authorities, parents, heads of charitable organizations and judges of the juvenile and police courts. This experience is invaluable to men after graduation, as the general practitioner has many opportunities

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for use of this knowledge and without actual experience he is at sea. How many physicians in Virginia consider themselves competent to sit on a commission of borderline feeble-mindedness? Yet the situation arises very frequently in every community where even a limited knowledge of this subject would be of invaluable aid. If we have succeeded in giving the students an outline of this knowledge, we feel that the clinic has accomplished much. Likewise, the clinic functions as a school of experience to public health nurses and psychiatric social workers who are regular attendants. They assist in the follow-up investigations.

The clinic is of value to the schools of Richmond in that a majority of the mental testing of pupils of the special classes is done at the clinic, grading of the pupil is established and advice as to the handling of the child is given the teacher and school nurse. Many ductless gland disorders, intestinal parasitic infections, congenital syphilitic conditions and other physical defects are detected, and the correction of these often causes a marked improvement in the mental capacity of the child. For those cases of simple feeble-mindedness who show no prospect of rising even to a fair mental level, the school authorities are advised to devote the greater part of their effort in teaching the child the manual arts rather than wasting time in the attempt to improve the intellect. The nervous, emotionally unstable school child, potentially a psychopath or neuropath, if detected early and trained at home and in school may be saved an unhappy existence.

Prisoners and delinquents of the juvenile court of Richmond, in whom there is a suspicion of insanity, irresponsibility or feeble-mindedness, are referred to this clinic. The courts are in this way aided in meting justice to those who come before them and the unfortunate is given a double chance. The court accepts the opinion of the clinic and many are thereby sent to the proper institution for treatment, who, without the aid of this clinic, would spend many idle hours in jails or penitentiary.

Charitable organizations, including the State Board of Charities and church societies, often seek the assistance of this clinic to help solve their problems. Most poverty and misery, as we all know, is either a direct or an indirect result of feeble-mindedness. It is usually the moral delinquent depending on feeble-minded-

ness, or the feeble-minded children of these delinquents, who are handled for the charitable organizations. These individuals at the clinic are classified and directed in the proper channel. These defectives are a drain on the moral and economic efficiency of the community and their safe keeping in state institutions is a blessing.

Another source of our material is the State Reformatory, at Laurel, and the Virginia Industrial Home for Girls, near Richmond. The inmates of these institutions are all delinquents, *per se*, and it is found that not a few of them should be in institutions for treatment rather than in schools of correction.

The quantity of material is more than can be handled in the time allowed by the college schedule, consequently the school authorities are limited as to the number of children they may bring each day, as the examinations are thorough, and we have found that to do efficient work and justice to each case, our material must be limited in quantity.

The average number of new cases per clinic is about four, the average number of old cases for further examination and advice is about the same. The total number of cases handled throughout the year is about three hundred. During the summer months the clinic is closed as the material from the schools is not obtainable. However, cases referred for an opinion during the summer are handled by the regular department of neurology and psychiatry, in the dispensary, which meets the entire year.

Our cases are roughly grouped into four classes:

1. THE SIMPLE DEFECTIVE.

In this class fall those cases of mental deficiency who are congenitally below the normal standard intellectually, and who show, on routine examination, no cause for their feeble-mindedness. The mental level of these individuals varies all the way from idiocy to that of the high grade moron. Many, and in fact most of them, are of the docile type; however, we very often encounter those with criminal tendencies. The low grades are a source of much trouble and worry to those who are responsible for them and should be committed to the feeble-minded colony. The middle grades of the feeble-minded, without criminal tendencies, as a rule, can be taught a simple trade and may make at times excellent laborers or servants and frequently are fairly productive useful members of society.

2. THE DEFECTIVE DELINQUENT.

The defective delinquent is usually a moron or psychopath, and, although they are fewer in number, they present the greatest menace to society. The feeble-minded delinquent with criminal tendencies is frequently the tool of a more intelligent criminal and is easily led and made to do the criminal acts for others' profit. This type is always recommended for commitment to an institution for the feeble-minded. Moral delinquency, more often than not, depends on feeble-mindedness or psychopathic personality. The young defective is taught various sexual habits, not infrequently those of sexual perversion; young girls are led astray and are made mothers of feeble-minded offsprings. These individuals are superficially bright and it is hard to convince the laity, and at times physicians, that they are feeble-minded or psychopathic and that they should be committed to an institution.

3. BORDERLINE INSANITY STATES.

These furnish less of a problem in this clinic than the aforementioned. However, potential cases of dementia praecox and the constitutional psychopathic states are encountered. Proper occupation, improvement of environment and careful observation are about all that can be accomplished in handling this type of case in an out-patient department.

4. ENDOCRINOPATHICS.

Probably when we know more about the various glands of internal secretion we will be in a position to effect improvement in more cases of mental deficiency. However, even in the light of our present limited, though growing, knowledge, we are able to recognize certain types of endocrine dyscrasias in the feeble-minded and psychopath, which we have every reason to suspect are factors in their maladies, for the feeding of these gland substances, in which they are deficient, causes improvement. It has long been a well known fact that an absence of thyroid secretion causes a condition of feeble-mindedness with physical defects known as cretinism. There is also recognized mental deficiency with various physical defects which depend on pituitary deficiency. This is usually the pre-adolescent hypopituitary type. Proper glandular feeding will often effect improvement. The authors believe, with many authorities, that the undersecretion of other ductless glands causes deficiency in mental as well as physical development. A great many cases of endocrine dysfunction

come under observation in this clinic and we have been able to effect striking improvement in a number of them. These cases are given mental tests from time to time and we must say that we are more than gratified with our results.

The examination comprises physical, including complete neurological, laboratory and psychological investigations. The person who brings the child, whether it be school teacher, school nurse, social worker or parent, is required to furnish complete history of the birth, development, family history, past history, environment, living conditions, social and moral history, history of progress in school work and economic efficiency. Each patient is stripped; a complete examination of heart, lungs, abdomen, genitalia, skin, mucous membranes, throat, teeth, hair, eyes (including fundi), station, gait co-ordination, all reflexes, muscle power and sensation is made. The patient is weighed and measurements are made if they appear abnormal. Laboratory examinations are routine on serum Wassermann, stool, urine, differential smear and haemoglobin. Other laboratory examinations, such as blood sugar, lumbar puncture and X-ray are done when indicated.

Psychological Examination. After gaining the confidence of the child, the psychologist applies the Stanford Revision of the Binet-Simon tests, in order to gauge the mental level. If there is marked speech defect, deafness, illiteracy, or an alien tongue to deal with, other tests are applied, such as the Goddard, Norsworthy, Witmer form-boards, Porteus maze tests, or some one of the army performance tests. If there is reason to suspect emotional instability, the Woodworth test is applied. Borderline cases of insanity and psychopathic personalities are given both free and controlled association tests—the Kent-Rosanoff Association test being the most reliable.

Personal knowledge and general information are tested both in conversation and by the application of the Blin-Damaye and Fernald General Information tests with variations applicable to the case at hand.

With this data in hand, the psychologist then proceeds to make a more or less qualitative study of the child from the history which accompanies him from school, court, institution or the home and submits his findings to the chief of the clinic.

Upon the completion of all examinations in

each case, the history is reviewed and discussed by the physician in charge of the clinic and the psychologist, in the presence of the students, social workers and other observers. Recommendations as to disposition are then made to those who are responsible for the patient.

Our chief ambition is that this clinic, maintained as we believe in the most approved manner, may be an incentive for the establishment of similar clinics in the other cities of the State, so that the problem of the feeble-minded may be co-ordinated throughout the State, looking toward the future benefit of our citizenship.

212 West Franklin Street.

TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.*

By DUDLEY C. SMITH, B. S., M. D.,
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The vast majority of cases of syphilis of the nervous system treated at the present time are in late stages of the disease. In fact, it is a prevalent idea that neurosyphilis is a late manifestation. It is true that most cases of syphilis do not show Argyll-Robertson pupils, loss of knee-jerks, ataxia, psychiatric disturbances, apoplexy, etc., in the early stages. Nevertheless, the pathological process usually begins in the nervous system early. The treponema gain entrance to the blood stream shortly after the initial inoculation, and it is at this time that the "seed are sown," which are later reaped as tabes dorsalis, paresis, optic atrophy, paralysis, etc.

The treponema pallida cause a slowly progressive reaction in nerve tissue as well as in other tissues. But this reaction can be detected before there is irreparable damage done if it is sought properly. Every case of syphilis should have a very complete examination before being discharged. From a neurological standpoint, this includes sensorimotor examination, repeated serum Wassermanns, and spinal fluid examination. The latter, spinal fluid examination, is the most important in recognizing involvement of the nervous system in its incipency. In some cases it is the only way in which early involvement is detected. For this reason it is advisable to do a routine lum-

bar puncture and spinal fluid examination on every case of syphilis. Approximately twenty-five per cent of all untreated and poorly treated syphilitics have cerebro-spinal involvement. All the burden of diagnosing neurosyphilis should not be thrown on the spinal fluid examination. The general practitioner, internist, surgeon, obstetrician, oculist, and other specialists should be able to recognize the early clinical manifestations of invasion of the nervous system by the treponema pallida.

The characteristic first change found in any tissue due to action of treponema pallida is a perivascular small round cell infiltration, and nervous tissue is no exception. At this stage intensive general therapy will be all that is necessary in about ninety-eight per cent of cases; the organisms are not out of reach of the treponemacides. Where the process is not checked, there occurs thickening of the vascular structures and proliferation of the interstitial connective tissue. The vascular obstruction and protection of the treponema by the increase in connective tissue makes treatment at this stage more difficult, and general anti-syphilitic therapy does not suffice.

In beginning the discussion of treatment proper, it should be emphasized that prevention is a much loftier goal than cure. Early diagnosis of syphilis and intensive treatment will prevent the vast majority of neurosyphilitics. A few "shots" of arsphenamine and mercury pills may cause the disappearance of the patient's complaint, but do not constitute a cure and do not prevent later lesions. An inadequately treated syphilitic had probably best never have consulted his physician. It is thought by some that a "little" treatment, by causing less immunity reaction on the part of the body, has a tendency to increase late nervous involvement. The complete eradication of the treponema from the human body requires that treponemacides be kept in a high concentration in the body over a rather long period of time. To repeat, prevention of neurosyphilis by destroying the foci in the different tissues of the body should be our aim.

Due to the prevalence of the disease, it is impossible for the syphilologists to handle the problem of treatment of all syphilitics; and, besides, the general practitioner with a small amount of preparation can safely and adequately treat a large percentage of cases of syphilis. Therefore, it is his responsibility

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to prevent so many syphilitics becoming neurosyphilitics.

A discussion of the treatment of syphilis of the central nervous system includes a description of the methods used to treat any case of syphilis, and in addition, certain forms of neurosyphilis require description of special methods. As indicated above, a number of the cases of early involvement need only intensive general antisyphilitic treatment. The cases of early involvement which do not respond to general treatment and practically all late cases of syphilis of the central nervous system require intraspinal treatment.

All persons with neurosyphilis can not be handled in a routine way, but it is best to have a routine to follow in the average person, and then to vary this as indicated.

Without going into a discussion of the reasons for the routine used at the University of Virginia Hospital, I will outline it under two divisions, general and direct. This outline has been adopted after experience with the various methods recommended. Sixty-seven cases have been treated and a total of two hundred and thirty-eight intraspinal treatments given since the introduction of intraspinal methods.

GENERAL TREATMENT may be subdivided into mental, motor, tonic, symptomatic, and specific. I will not discuss the first four subdivisions, regardless of their importance.

Specific treatment consists of the use of arsphenamine, mercury and iodides. The usual procedure is to begin by giving the patient arsphenamine and potassium iodide. Arsphenamine (0.4 gm.) is given intravenously for six injections at weekly intervals and also at

the times the patient returns for intraspinal treatment. The iodide is given in fifteen grain doses one hour after meals. Following the six weekly injections of arsphenamine, mercury is given for two months. Injections of soluble salt (bichloride) or insoluble salt salicylate) are preferred. If this is not practicable, mercurial inunctions are used. Iodides are continued during this period. At the end of the two-months' mercury period, all treatment is discontinued for one month.

THE DIRECT OR INTRASPINAL TREATMENT consists of injections of arsphenaminized serum. Blood (10-20 cubic centimeters) is withdrawn, allowed to clot for thirty minutes, then centrifugalized at high speed for ten minutes. From five to ten cubic centimeters of clear serum are obtained. To this is added the amount desired (0.4 mgm.—0.8 mgm.) of arsphenamine in fresh neutral solution. This mixture is placed in water bath at a temperature of 56° C. to 60° C. for thirty minutes, at the end of which time the serum is ready for injection. After the removal of about twenty-five cubic centimeters of spinal fluid the serum is injected into the subdural space by gravity. These treatments are given during the second, fourth, sixth, ninth and twelfth weeks of treatment.

I would like to emphasize one point in regard to the use of arsphenaminized serum intraspinally which has been neglected. Serum-arsphenamine mixture has a higher treponemacidal titre than simple or alkaline solution of arsphenamine, and albuminous substances are not secreted by the choroid plexus.

OUTLINE OF SERIES OF TREATMENTS FOR SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.

General		Direct (Intraspinal)	
Week			
1st	Arsphenamine and Iodides		
2nd	Arsphenamine and Iodides		Arsphenaminized serum.
3rd	Arsphenamine and Iodides		
4th	Arsphenamine and Iodides		Arsphenaminized serum.
5th	Arsphenamine and Iodides		
6th	Arsphenamine and Iodides		Arsphenaminized serum.
7th	Mercury and Iodides		
8th	Mercury and Iodides		
9th	Mercury, Arsphenamine and Iodides		Arsphenaminized serum.
10th	Mercury and Iodides		
11th	Mercury and Iodides		
12th	Mercury, Arsphenamine and Iodides		Arsphenaminized serum.
13th	Mercury and Iodides		
14th	Mercury and Iodides		
15th-20th	Rest		Rest.

The above outlines what is spoken of as a series of treatments. A minimum of two series is given every case, usually more. At the end

of the second rest period a serum Wassermann is done and a spinal fluid examination is made. These findings, together with the

clinical conditions, determine the course of procedure. Some form of treatment for at least three years is necessary. Proper examinations are made about every three months. From these findings it is determined whether or not to give more series of treatments.

There are cases of syphilis of central nervous system which do not respond beyond a certain point to any form of treatment. The therapeutic procedures are time consuming and cause more or less discomfort. It is sometimes a question whether or not it is best to leave the patient with an abnormal spinal fluid or to subject him the rest of his life to the discomforts of treatments. Lind rightly says, "The beneficent therapist, then, proceeds cautiously with this antisiphilitic therapy, feeling his way along with one eye on the spinal fluid and the other on the patient himself, and does not let his *furor therapeuticus* blind him to the welfare of the patient." On the other hand, vigorous treatment is the only way to prevent a progression of the process.

SUMMARY.

1. In syphilis of the nervous system the process usually begins soon after the initial inoculation.

2. Early treatment of all syphilitics prevents most of the late manifestations of syphilis in the nervous system. General practitioners should be able to treat safely and adequately a large percentage of cases of syphilis.

3. The earlier a case of neurosyphilis is diagnosed the better the therapeutic results to be expected.

4. Preponderance of opinion favors the combination of general and intraspinal treatment of syphilis of central nervous system.

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DISCUSSION

Dr. R. Finley Gayle, Richmond: I am glad to say that Dr. Smith's idea in regard to the treatment of neurosyphilis more or less coincides with my own. In a large number of cases of spinal syphilis, both in our private and clinical service, we use a combination of intravenous and intraspinal salvarsan in those cases which have a positive fluid Wassermann, increased cell count and globulin. Our results have been quite satisfactory. It is our rule to give these cases a series of six intravenous and intraspinal treatments at an interval of a week. The patient is then given a rest for two months during which time mercury and the iodides are administered. Wassermann test of blood and fluid are again made and, if they prove to be positive, another series of six treatments is given, but, should they be negative, the patient is allowed to rest for six months. If negative at this time, the patient is allowed to wait a year and if again negative is allowed to wait two years, and so on. If at any time, however, the serology, either in blood or fluid is positive, another series of six treatments is given. We find that those cases who carry out instructions to the letter and who report for treatment when requested do very well.

ADENOMA OF THE PITUITARY: REPORT OF FIVE CASES.*

By JAMES W. HUNTER, JR., M. A., M. D., Norfolk, Va.

It is my privilege to report on this occasion a series of five cases of brain tumor, all of which can, I believe, be definitely diagnosed as adenoma of the pituitary. It is especially my privilege to exhibit the roentgenographic evidence and to discuss this and the clinical findings in some detail. Of these five cases, three died following operation, one is living some three years after operation and of one we have lost sight. Three of these cases were females; two were males. The youngest was nine years of age; the oldest was fifty-three.

CASE 1.—Miss W., referred by Dr. H. L. Myers, December 10, 1917. Family history practically negative, except that all members suffer with headaches and that her mother has had one still birth and one miscarriage. Patient's birth normal. Age 24. Has had usual diseases of childhood. Complains of severe headaches, with which she has suffered for many years. Has lately had considerable trouble with her vision and has had to have her glasses changed repeatedly with no relief. Has lately begun to grow very fat.

Examination shows a young lady of more than average intelligence, quite fleshy, but no other deformity. Examination of the fields of

*Read at the fifty-second annual meeting of the Medical Society of Virginia, at Lynchburg, October 18-21, 1921.

vision by Dr. Myers shows a bitemporal hemi-

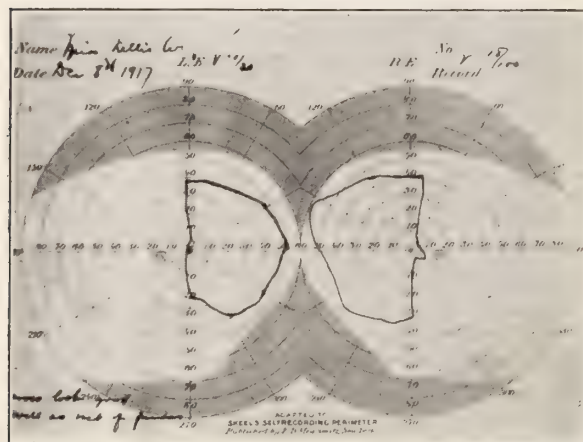


Fig. 1. Showing the fields of vision of Case 1.

anopsia (Fig. 1). No examinations made of tolerance to levulose or other sugars; no especial examination of the endocrine organs. Skin clear. A roentgenogram of the lower portion of the cranial cavity shows a diffuse infiltration, as of a tumor, measuring 55 mm. x 22 mm. The remains of the sella turcica are with difficulty made out, the cavity being



Fig. 2. Showing roentgenogram of sella region in Case 1.

about 10 mm. x 8 mm. (Fig. 2) No roentgenographic examination of the fingers.

The case was referred to Dr. W. E. Dandy. At the operation, February 7, 1918, the following findings were noted: "The skull was not abnormally vascular nor thick. The dura was exceptionally tense, perhaps more vascu-

lar than normal. The cortex showed distinct convolutional flattening. No fluid in the subarachnoid space. Considerable bulging. Exploration revealed a tumor mass extending up into the middle and anterior fossae behind the optic nerves and the olfactory bulbs. It was not at all cystic. No accumulation of fluid about it. It was very cellular and through it ran the tributaries of the carotid, usually seen on the outside of the tumor." Death occurred the same day. No autopsy.

CASE. II.—Mrs. S., referred by Dr. H. L. Myers, February 5, 1918. Widow, 53. Family history was not obtained. Complaints of gradual impairment of sight. No increase of flesh. No especial headaches. No other symptoms.

Examination shows a lady of rare intelligence, medium stature, well nourished, but no excess of fat, clear skin and an appearance of being much older than the age as stated. No special examination of the fingers; no special examination for tolerance to the sugars; no special examination of the endocrines. Examination of the fields of vision, September 12, 1917, by Dr. Myers shows a considerable reduction of the outer vision in the left eye. (Fig. 3). On January 16, 1918, the fields were

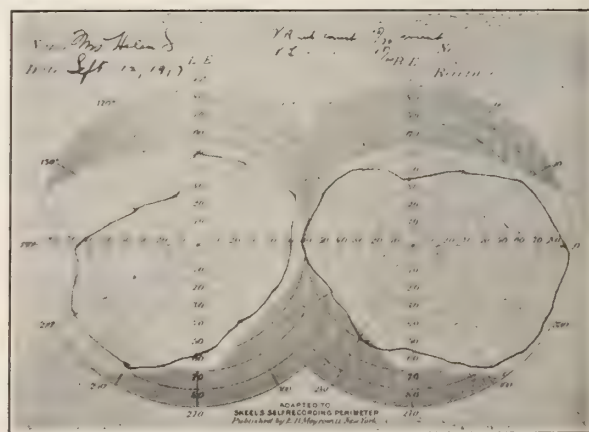


Fig. 3. Case 2. Fields of vision Sept. 12, 1917.

much smaller with a notch in the upper and outer quadrant of the left eye. The blue fields were very small; the reds were exceedingly small and showed a distinct bitemporal hemianopsia. (Fig. 4). The roentgenological examination shows an exceedingly large and especially finely defined sella turcica, measuring 22 mm. x 15 mm. with an interclinoid distance of 9 mm. No other evidence of tumor. (Fig 5).



Fig. 4. Case 2. Fields of vision Jan. 16, 1921.

The patient was referred by Dr. Myers to Dr. W. E Dandy for operation, which occurred



Fig. 5. Case 2. Roentgenogram of Sella Turcica.

on May 8, 1918. The cortex was found to be normal in appearance except for a slight collection of cerebrospinal serous fluid in the sub-arachnoid space toward the center of the exposed area. The vessels were not unusual in appearance. A bulging was made out anterior to the optic nerve, which proved to be an hypophyseal tumor, which was encapsulated. In order to remove the tumor to better advantage, it was necessary to transect the optic nerve. This displayed the suprasellar growth, which occupied a small excavation lying posterior to the optic chiasm and apparently communicating with the intrasellar growth of like kind. Some venous oozing was encountered

but no serious hemorrhage occurred. No microscopical examination.

The patient survived the operation, but gradually lost her entire sight. She died about two months after returning home. No autopsy.

CASE III. Mr. K., referred by Dr. H. L. Myers, July 10, 1918. Unmarried, 28, stenographer. Family history unobtained. Complains right eye, which has troubled him since birth. His left eye has troubled him for twelve years. Has always been troubled with more or less crossing of eyes. No history of increase of flesh; no special history of headaches.

Examination shows a well nourished young man, of medium build, with no especial features of the face or hands, though on account of his occupation there would probably be a trade change rather than an organic one. No special examination of the endocrine system, nor of a tolerance to the sugars. In short, Mr. K. presents all of the characteristics of a normal man of his age and, without the history of eye trouble, would have passed unobserved.

Examination of the fields of vision by Dr. Myers, however, shows a complete bitemporal hemianopsia. The inner field of the right eye is almost normal; that of the left greatly contracted. The fields of the blue and red are es-

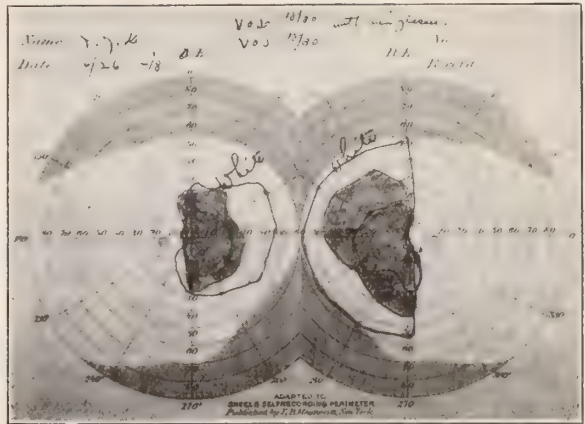


Fig. 6. Case 3. Fields of vision before operation.

pecially contracted, particularly on the left, where they appear very small. (Fig. 6). The roentgen examination shows, as in the case of Mrs. S., an exceedingly finely defined sella turcica, but more so and somewhat larger, measuring 25 mm. x 17 mm. with an interclinoid distance of 11 mm. No other evidence of tumor. (Fig. 7).

The patient was referred by Dr. Myers to Dr. Dandy for operation. This occurred on

August 13, 1918. A low craniotomy flap was turned down and the hypophysis readily exposed, a considerable amount of cerebrospinal

also the name). Mrs. X., referred by Dr. W. E. Driver during the fall of 1919. White, age about 30, married. For several months

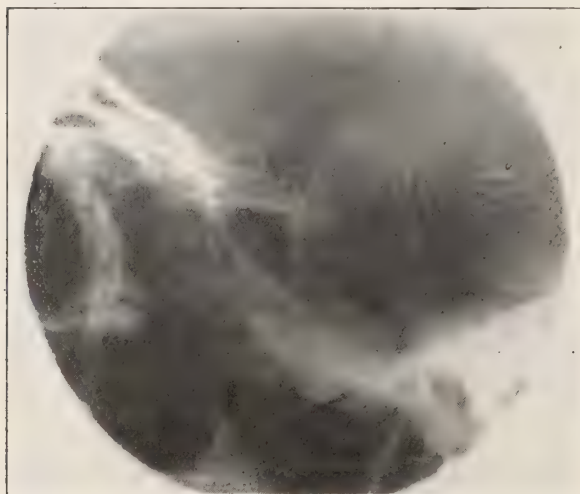


Fig. 7. Case 3. Reontgenogram of Sella Turcica.

fluid being obtained in the neighborhood. The tumor itself was small, of a pale pink color and pointed between the two optic nerves. In order to remove it entirely, the right optic nerve was cut. The capsule was quite friable. In the center of the tumor there was probably a dram of clear fluid. The tumor itself was of the usual type of adenoma of the pituitary.

The patient is alive and doing well, though the sight of the right eye has been lost. There was a marked contraction of the field of vision of the left eye just after the operation.

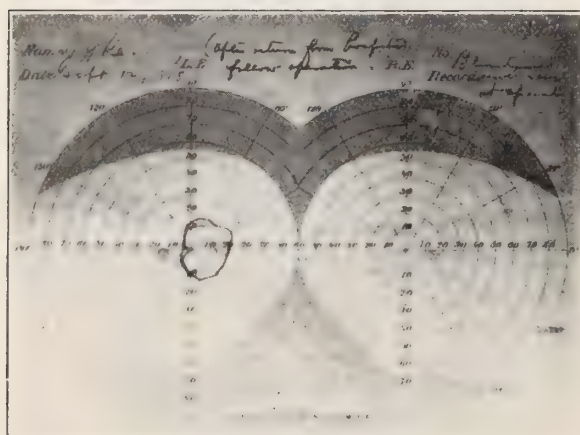


Fig. 8. Case 3. Fields of vision after operation.

(Fig. 8). This has now increased and the patient enjoys fairly good sight. (Fig. 9).

CASE IV. (My notes have been misplaced;

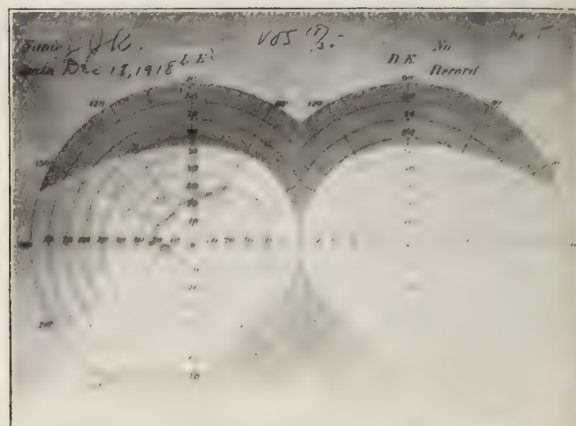


Fig. 9. Case 3. Fields of vision. Final result.

gradually getting worse. At first her eyes had entirely failed; lately her hearing; now she is entirely blind and almost entirely deaf. No family history obtained.

Examination shows a woman fairly well nourished, but no evidence of superfluous fat; no especial hypopituitary symptoms; entirely blind, quite deaf and very ignorant. It was somewhat difficult to make the patient understand what was wanted, but, once she understood, the directions were perfectly executed. So rapid had been the onslaught of the trou-

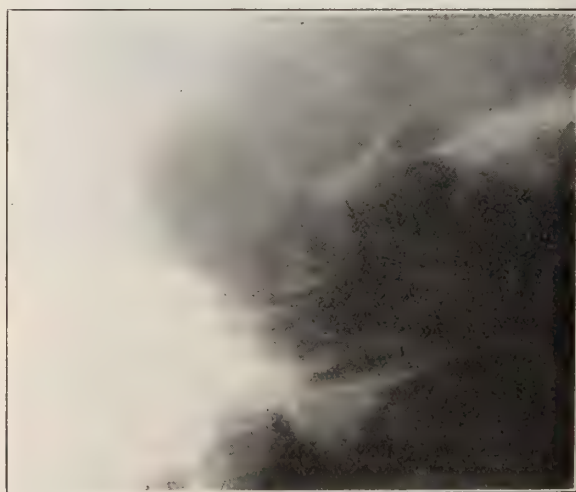


Fig. 10. Case 4. Roentgenogram of sella region.

ble that syphilis was suspected, though a careful questioning both of the patient and her husband yielded a negative answer. Never-

theless, at my suggestion, antiluetic treatment was tried by Dr. Driver with a negative result. No examinations were made of the patient's fingers, her sugar tolerance, nor of her thyroid or adrenals. The roentgen examination of the lower portion of the patient's cranial cavity revealed, as in case I, a shadow, as of a tumor, measuring 42 mm. x 27 mm. The sella turcica itself is rather faintly visible and measures approximately 18 mm. x 12 mm. with an interclinoid distance of 5 mm. (Fig. 10).

The patient left Dr. Driver's care seeking aid elsewhere. Neither Dr. Driver nor I has heard from her since, but I think that we may reasonably conclude that, on account of the rapid onset of the symptoms and the amount of the brain involved, death soon occurred.

CASE V. David B., referred by Dr. R. L. McMurran, March 12, 1921. White, 9 years old. No family history obtained. Several months ago had an injury on the left side of his head. In fall of 1919 was sent home from school by his teacher for an examination of his eyes. At that time Dr. R. L. McMurran referred the case to Dr. B. R. Kennon, who in turn sent him to Dr. Geo. E. de Schweinitz for observation. Under the care of Dr. de Schweinitz from May 13 to early part of June, 1920. Has lost entire vision of left eye and

When seen by Dr. de Schweinitz on May 13, 1920, the right eye gave a 5/20 vision; the left eye, no light perception. Right pupil, 4 mm. prompt light reaction, disk greenish in color and moderately capped, some suggestion of displacement of the vessels; a rim of choroidal atrophy surrounded the disk; throughout the eye-ground moderate granular pigmentation. Left eye similar, more advanced process. Wassermann negative; no test of basal metabolism, sugar tolerance, etc. Placed upon pituitary extract, but no special improvement. (Fig. 11).

Examination shows a well nourished child, of good complexion, normal size and remarkably bright. Aside from his eye complaint, he feels well and apparently suffers no other discomforts. Execution of movements and co-ordination perfect. To give one example: The boy wore an olive drab coat, upon whose sleeves had been braided captains' frogs. It seems that he had been taught to salute by Dr. de Schweinitz. Upon being told by his father to salute me, he immediately assumed the position of attention and executed the movements with as much grace as, and more agility than, many of our veteran officers. The roentgenological examination reveals a shadow, as of a tumor, occupying the lower portion of the brain, measuring 55 mm. x 20 mm. and

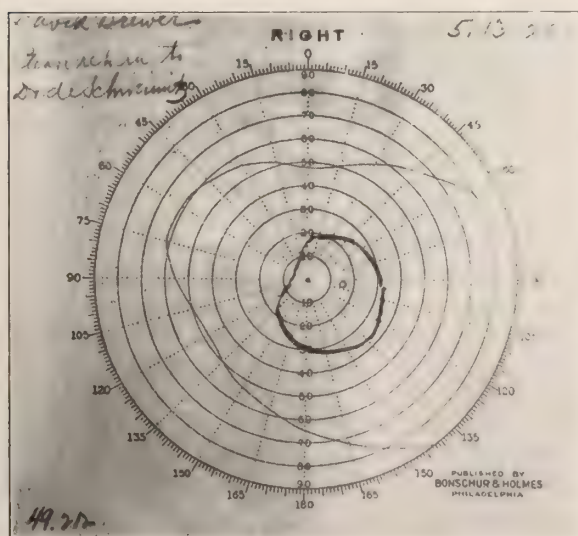


Fig. 11. Case 5. Field of vision right eye, May 13, 1920. (Courtesy of Dr. de Schweinitz.)

one half vision in right eye due to optic atrophy. No special history of headaches or other pituitary symptoms.



Fig. 12. Case 5. Roentgenogram of Sella Turcica.

extending downward into the sella turcica, which measures 15 mm. x 12 mm. while at its upper portion, in the neighborhood of the pons,

is a deposition of lime salts measuring 6 mm. x 8 mm. (Fig. 12).

A hopeless prognosis was, accordingly, given. About two weeks later Dr. Dunn, of Richmond, was consulted. He corroborated our opinion. Nothing further occurred until about the sixth of April, 1921, when the father called at my office to say that blindness was complete. He urged surgical intervention. At my suggestion Dr. McMurran referred the case to Dr. Dandy.

The operation was done in two stages. At the first stage, April 16, 1921, the dura was found to be very tense, but nothing could be seen showing through it. An ounce or two of clear fluid under pressure was obtained by a ventricular puncture. The dura was not opened. At the second stage, April 26, 1921, an ounce and a half of clear fluid was obtained by ventricular puncture, but not sufficient to warrant the opinion of a hydrocephalus. An attempt to explore the hypophyseal region was attended with a severe hemorrhage. The brain was retracted with a spatula. The olfactory tract was divided. Soon one saw the right optic nerve with the internal carotid artery just behind it and a huge bluish rounded mass as large as a lime anterior and medial to it. Further exploration showed the left optic nerve on the other side of the mass. It went behind and below the optic nerves as well as to each side. It was opened but no fluid obtained, only a yellowish red solid tumor. This was removed *en block*, a large part being calcified as noted in the roentgenogram. The tumor was very friable, of a yellowish color and contained several cysts. Frozen sections showed it to consist of many acini lined with low colloidal epithelium, probably an adenoma. The patient's condition had become precarious. Death occurred three hours later. No autopsy.

It will be noted that all of these cases primarily complained of failing vision. In two cases there was a complete bitemporal hemianopsia for all of the colors; in one there was a greatly contracted field of vision for either eye with a bitemporal hemianopsia for the blue and red; in one there has been a gradual loss of sight, that of the left eye being entirely gone when seen and a temporal hemianopsia in the right, the blindness becoming total in time; and in one, case IV, a complete

blindness existed when seen. This will, I think, serve to emphasize the need of mapping out the fields of vision in all doubtful cases. Indeed, it was this alone, combined with the sudden acquisition of fat, that led Dr. Myers to refer case I to me. The patient stated quite positively that her glasses had had to be changed many times and it was this consequent change that led her to be referred to Dr. Myers. It is furthermore to be noted that in case II there is a distinct notch in the outer and upper quadrant of the fields of vision. Cushing, in his book on the pituitary, mentions it in some of his cases, though he does not emphasize the finding. But to me it would seem most suspicious and especially to be noted.

To explain the physical phenomena underlying the failing vision or bitemporal hemianopsia, it will be necessary briefly to review some of our anatomy. We shall remember that beginning at their deep origin in the optical centers the optic tracts trace their superficial origin from the corpora quadragemina and optic thalami and, passing downward and inward, cross the tuber cinereum in relatively close approximation to the infundibulum and proceed anteriorly to a decussation, which is just in front of the infundibulum and quite near the sella turcica. It is also to be noted that the decussation involves only the inner half of either tract, the fibres of the external portion of the right or left tract being distributed respectively to the right or left portion of either eye. If now we should cut the optic tract before its decussation, we would get a loss of vision of the portion of the retina supplied by its fibres, or in case of the right tract, a temporal hemianopsia in the left eye and a nasal hemianopsia in the right and *vice versa*. If we cut the optic nerve after its decussation, we shall have a total blindness of the eye in question. If the cut is made at the decussation, there results a bitemporal hemianopsia. This is exactly what we have clinically and is accounted for by the pressure anteriorly of the tumor. It is likewise seen that if the sight of an eye is lost in addition to the hemianopsia there is a lateral pressure.

In one of our cases (and perhaps others) it will be noted that the patient complained of intense headaches; Miss W. supposed that hers were largely hereditary. But here again it should be noted that the question of pressure

plays an important part. We have lately heard much of the so-called pituitary headaches and great clinicians have taken much time and pains to describe the particular kind and distribution. These clinicians have been so sure of their diagnoses that with them the examination of the sella plays only a secondary part. If the sella is normal, the pressure exists just the same; if the sella is rather small, the diagnosis is unquestioned; if relief is afforded by pituitary extract, the diagnosis is established; if no relief is had, the diagnosis can not be disputed. For my own part I have felt that more is being put upon the pituitary than that gland can rightly bear. I feel that we have only approximately established a norm as yet. In my own experience the sella turcica should measure in the average adult about 12 mm. in length and from 8 to 10 mm. from above downward, with an interclinoid space of 4 mm., as viewed upon a properly exposed roentgen plate; but the more cases I see, the more doubtful I am, more especially as the technique of exposure is being changed and varies with the individual roentgenologist. Be this as it may, however, a rapidly growing tumor of the pituitary, whether of the pars anterior or of the entire gland, will certainly cause a pressure upon the remaining sella and headaches must ensue. But again it must be noted that, though the narrowing of the interclinoid space is looked upon as an explanation of essential epilepsy, the epileptics directly resulting from hypophyseal tumor are few indeed.

The remaining symptoms usually associated with the classical symptom-complex of pituitary tumor must be explained upon the action or non-action of the gland itself. A growth of the gland is said to be associated with gigantism and acromegaly. I recently saw a case of acromegaly in consultation with Dr. W. B. Martin, in which there was a pituitary somewhat larger than the norm. The fingers were much distorted and greatly thickened. The sella turcica measured 17 mm. x 11 mm. Upon the other hand, a gradual inroad upon the gland by a tumor must give rise to those symptoms, which we have associated with a condition of hypopituitarism. In the case of Miss W. there had been an exceedingly rapid increase of flesh. Unfortunately, however, no means were at hand to study the other symptoms, viz., the tolerance to sugars, the normal or subnormal temperature or pulse tension.

the reaction to pituitrin and the thousand and one other features of hypopituitarism.

Upon a careful review of our roentgen findings, we are led to the conclusion that two types of pituitary tumor exist; those apparently confined to the gland itself and by their pressure developing large and finely defined sellae turcicae; and those apparently involving all of the adjacent structure and giving but a hazy outline of what apparently was the sella. In the cases of Mrs. S., Mr. K., and David B., we found large and finely defined sellae turcicae. These have come to operation and the findings are definitely proved. In the cases of Miss W. and Mrs. X., however, there is an apparent absorption of the bony framework and shadows, as of a tumor of the brain. Miss W. came to operation and proved the diagnosis. The total blindness and progressive deafness of Mrs. X., together with a demonstrable enlargement of the sella turcica, leave no doubt in my mind as to the real nature. To this we must add that the case of David B. was not confined to the sella turcica, that there was a distinct appearance, as of a tumor, and a deposition of lime salts. This also was proven upon operation. So that we shall consider that the tumor may arise from the pituitary or from a portion of the surrounding brain and secondarily involve this gland.

It will be noted that in all of the four cases operated upon a hypophyseal tumor was removed and each was surrounded by a capsule. In the case of Mr. K. there was a dram of clear fluid in the center; in David B. the tumor consisted "of many acini lined with a low colloid epithelium". In all the cases the diagnosis was that of adenoma. This leads us to a consideration of just what the growth is. Both Cushing and Ewing describe a condition of hyperplasia of the pars anterior, in which the chromophore or neutrophilic cells predominate. These conditions often produce a hernia of the surrounding capsule. This explains the presence of fluid. The tumor has merely become cystic. On the other hand, according to Ewing, some of these hyperplastic conditions pass into a state of malignancy or adenomatous carcinoma. Histologically, therefore, the tumors are benign. Clinically they run a malignant course. The explanation is that the normal cells of the pars anterior have been destroyed by a pressure; and it is this destruction of the gland and the pressure upon

the optic chiasm and other portions of the brain and its appendages that lead to the complicated symptom-complex, which we have been discussing.

The diagnosis, therefore, is placed wholly upon the clinical and roentgenological findings. It is placed entirely upon a failing vision or bitemporal hemianopsia, an enlargement of the sella turcica and any other marks of an involvement of the hypophysis. It is, of course, the oculist, from whom the patient first seeks relief, and I do not think that I exaggerate when I state that the fields of vision in every suspicious case should be mapped out. A narrowing of the fields or a bitemporal hemianopsia is at least suggestive. This leads directly to a roentgenological examination of the sella turcica. If this, in turn, is enlarged or eroded, the diagnosis is most certain; and, to be perfectly frank, it is as certain as any diagnosis that we may make outside of an operation or autopsy.

It will also be noted that of our cases three are dead, one probably dead and one living. This leads invariably to the conclusion that in adenoma of the pituitary we have a condition that is rapidly fatal. A few cases, as that of Mr. K., can undoubtedly be saved by operation. But this is not without its defects. The removal of the mass is often so difficult that a portion of the optic tract or optic nerve has to be sacrificed. In the case of Mrs. S., the patient became completely blind before her death. Some sacrifice had also to be made in the case of Mr. K., but the surgeon wisely concluded that a sacrifice was more than justifiable. This should lead us to an effort for the earliest diagnosis and, if operation is to be sought, it should be sought before any considerable damage had been done to the substance of the brain.

I have quoted quite extensively from the operative notes in all of our cases, upon which Dr. Dandy has operated. He uses the subtemporal route in the hope of radically removing the tumor. It is thus recognized that the old operation of relieving the pressure, first through the nasal, afterward through the frontal, approach to the sphenoid, was at best only palliative. This combined with the operation of a single or double decompression could only relieve the pressure. The tumor continued to grow. With the therapeutic procedure of feeding the patient upon pituitary or other endocrine extracts, either with or

without operation, I have had no experience, though this is to be noted that in the case of David B. no result was obtained. Cushing in his excellent book strongly advises it. Nor have I had any experience with deep roentgen or radium therapy. Personally, I can see but little that can be accomplished, as the number of areas, by which the hypophysis can be reached in roentgen therapy, is limited to two and, as the gland lies deep, much tissue must be penetrated. In the admission of radium, however, into the drainage area and leaving it there for some hours or inserting the radium into the tumor itself by means of needles, as advocated by Pancoast, I can see some hope; and it is my earnest wish that such an opportunity will be afforded.

My thanks are due to Dr. H. L. Myers, to Dr. W. E. Driver, to Dr. R. L. McMurran, to Dr. Geo. E. de Schweinitz and to Dr. W. E. Dandy, without whose kindly co-operation this paper could not have been presented.

PROSTATECTOMY UNDER LOCAL ANESTHESIA; REPORT OF SIXTEEN CASES.*

By T. J. HUGHES, M. D., Roanoke, Va.

After learning of the papers on prostatectomy, by Dr. Bryan and Dr. Neff, which are to follow, I have omitted the discussion in detail, of the etiology, pathology and symptomatology of this condition, knowing that these general considerations will be thoroughly taken care of in their papers.

No class of surgical risks demands more consideration in diagnosing, and preparing for the operative procedure that will offer relief of a distressing condition, than does enlargement of the prostate. The following conditions almost invariably present an unfavorable surgical risk:

AGE. The patient is burdened with the infirmities of age, being rarely under sixty and more often above sixty-five years. The general debility, renal insufficiency, and pronounced arteriosclerosis, incident to advanced age, coupled with general infection of the urinary organs, in many of these cases, render the prospects for good results unfavorable.

THE KIDNEYS, which are rarely good in a man of that age, have been subjected to the evil influence of a train of long standing conditions, such as back pressure of an infected

*Read at fifty-second annual meeting of Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

alkaline urine, causing cystitis, pyelitis, pyonephrosis or pyelonephrosis, in many cases.

THE HEART is usually the victim of myocardial changes, due to the prolonged strain incident to the back pressure on the kidneys, resulting in varying degrees of dilatation, insufficiency and valvular lesions. The blood pressure is usually high, the vessels sclerotic; in fact, the picture is one of contraindication to a major surgical operation, yet the condition is one of mechanical obstruction, for which only surgery offers relief.

Prostatectomy has been and is being done under local anesthesia, by a few men, with varying degrees of success; hence the writer is laying no claim to the origin or perfection of this technique. My apology for reporting this small series of cases is to register a plea for a more general investigation of its merits, as compared with general anesthesia, in properly selected cases.

The advantages of local, over general anesthesia, in these cases may be summed up as follows:

1. Shock, in my experience, is much less. In the sixteen cases reported here, none required active treatment to relieve or combat shock.

2. Kidney function is not lowered. Water, which has been forced in the preparatory treatment, is continued during and after operation; proctoclysis was only employed in three of my cases, where age and general debility were advanced.

3. The patient is rarely nauseated after operation, hence taking of water and food is not suspended or reduced, and the strength and vitality gained by increased food and water before operation, is not lost while waiting for the stomach, kidneys, or other vital organs to regain the lessened function incident to general narcosis.

4. The patient is usually out of bed in from three to five days after operation, a point of considerable importance with these old people.

With proper care and technique, I believe that pain experienced should not exceed that of hernia, under local anesthesia, and shock and nausea is not nearly as apt to occur.

The situation then, resolves itself into a life-saving operation under the most adverse circumstances. The surgeon is confronted with the task of improving the condition of the vital organs as far as possible, and subsequently, avoiding agencies or procedures that will

add to shock and interfere with the function of the already crippled organs.

Before the advent of the two-state operation, the performance of prostatectomy was fraught with much greater danger. The preliminary cystostomy and drainage for several days accomplishes much in relieving the kidney of back pressure, thus allowing its function to improve, as well as emptying the bladder of its residuum, and clearing up the infection present. In, in addition to this preliminary or preparatory step to the major operation of removing the gland, we can so perfect the technique of local anesthesia, and thus avoid subjecting these old men to a general anesthetic, we will have advanced another step in reducing the mortality in these cases.

Several of the cases in my series stated that they experienced little or no pain in the enucleation of the gland, and in no case was the pain claimed by the patient to be greater than they had experienced in catheterization.

PREPARATORY TREATMENT.

When possible, the back pressure is relieved by a permanent catheter in the urethra, through which are given daily irrigations of boric solution, followed by instillations of fifteen per cent argyrol solution, to prevent or clear up infection. This relieves the pressure on the kidneys, due to damming back the urine, and is capable of elimination one of the chief hazards of the operation by allowing the kidney function to improve. If a permanent catheter is impractical, drainage is established suprapubically. The patient is put on a urinary antiseptic and induced to drink large quantities of water, thus filling the contracted circulatory system, increasing the body fluids, promoting rest and sleep, and a decided general improvement of all of the bodily functions.

Great care should be taken not to relieve an over distended bladder too rapidly, as the sudden withdrawal of a large amount of urine might cause suppression, due to acute congestion of the kidneys. Sufficient time should be consumed in the preparatory treatment, to be sure that secondary congestion of the kidneys is not going to follow the relief of the back pressure, or if it does occur, to allow it to clear up before the major operation is performed.

The time required to secure the maximum benefits from the preparatory treatment varies

from a few days to several weeks, and is governed by each individual case. I believe the average is about one week. Frequent examinations of the urine and systematic testing of the kidney function are our best guides in deciding when to operate.

After instituting the preparatory treatment, the specific gravity of urine falls. After it has reached its minimum it begins to rise, which indicates restored metabolism and improved kidney function. With the rise in specific gravity, there is noted an improvement of the kidney function, evidenced by repeated phthalein tests.

The anesthetic used in this series of cases was novocaine. The skin and underlying tissues, down to the bladder, are thoroughly anesthetized with a one per cent solution. While this is being done, an assistant is irrigating the bladder with boric solution, through a catheter, which is left in the urethra. The bladder is moderately distended with this solution (boric), and the catheter clamped off, to prevent its escape.

With the patient in the Trendelenburg position, an incision from three to four inches in length is made through the skin, muscles and prevesical fat. The bladder being recognized through the prevesical space, the peritoneum is reflected and held out of the way by retractor, to avoid entering the peritoneal cavity. The bladder wall is then infiltrated with a one to four hundred solution of novocaine, and opened just behind the pubic bone, the incision lengthened toward the fundus.

The capsule of the prostate is then infiltrated thoroughly with the same solution and the enucleation of the gland is carried out by the usual method, the fore and middle finger of the right hand in the bladder and counter-pressure by the left finger in the rectum. The urethral catheter is left in place and a strip of gauze packed around it to control bleeding. A rubber tube is inserted and the end of gauze pack brought out by the side of the tube, and the bladder closed tight. The prevesical space is drained with a short piece of gauze and the skin closed in the usual way. The gauze pack and drain are both removed on the second or third day, and the bladder irrigated through and through once a day. Until the suprapubic tube is removed and the patient allowed out of bed, he is usually as dry as after any abdominal operation.

The suprapubic tube is removed as soon as the patient can be up. The incision closes quicker if the tube is removed early.

This series of cases were simple hypertrophy of the prostate, the youngest being sixty-four and the oldest eighty-five years of age. The shortest stay in the hospital, after operation, one week; the longest, one month, or an average, sixteen days. There were no deaths and all left the hospital greatly improved generally, and the bladder function good in each case. Since from eighteen to twenty per cent of enlargements of the prostate are malignant, great care should be exercised in determining the character of the growth and, if a malignant prostate is enucleated, radium or crossfire X-Ray should be employed immediately.

A PLEA FOR THE EARLIER REFERENCE OF THE PROSTATIC.*

By JOHN H. NEFF, M. D., University, Va.

With the passage of years it has increasingly become our conviction at the University of Virginia Hospital that the greatest obstacle confronting the urologist is the late reference of the average prostatic, using this term to include all types of prostatic obstruction. Conversely, we think this very situation offers the urologist and the medical profession a real opportunity for the reduction of morbidity and mortality in this disease. During the past decade remarkable betterments have accrued in the handling of the prostatic, particularly in the way of pre- and post-operative care. The combined work of many men in many clinics has outlined so clearly those fundamentals of technique essential to good results that the treatment of the operable case is well-nigh standardized. The effect has been a steady fall in operative mortality and an improvement in functional results. Research and effort continue in all urological clinics toward an even lower death rate and for better end-function. Yet, to our mind, the greatest chance at present for securing perceptibly these desiderata lies not with the urologist alone, but with the family physician and the patient himself in co-operation with the urologist, to the end that a larger proportion of these old men reach the surgeon with early, not late obstructive symptoms.

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To present as forcibly as possible our basis for this judgment, we have analyzed our cases of prostatic obstruction for the quadrennial period, July 1, 1917, to July 1, 1921. Some six or eight patients remained in the hospital too short a time to be worked up satisfactorily and these are not included.

We have available for study one hundred and forty-four cases, divided thus: One hundred and eleven cases of benign hypertrophy, twenty-three cases of cancer, and ten cases falling in the so-called median bar or neck-contraction group. Seventy-five of the benign hypertrophies and eleven of the carcinomata came to prostatectomy, while eight of the contraction group were handled by Young's punch procedure. In this series of ninety-four operatives there were three deaths. In striking contrast to the operative mortality there were fifteen deaths among the patients whose physical state forbade surgical attack upon the prostate. Furthermore, twelve men were sent home as inoperable, after provision for bladder drainage had been made in one manner or another.

Quite obviously, explanation must be sought for this large death list in non-operative cases. Either there have been serious errors in our preliminary measures, or else systemic damage upon admission must have been so far advanced as to deny benefit from practically any line of treatment. Our investigation would indicate that the fact that twelve cases were discharged as hopelessly inoperable suggests, in large measure, the answer to this query.

We have painstakingly reviewed the admission status, physical and functional, of these fifteen patients and also the treatment employed in each instance. Space and time will not permit a detailed report concerning either feature. Suffice it to say that such factors as uremic coma, extensive infection of the upper urinary tract, carcinomatous metastases, a phenolsulphonephthalein output around five per cent, complicating tabes, fracture of the hip, cancer of the large bowel, offer ready reasons for a failure of response to standardized therapy. We think we can say without bias that the element of technical error was minimal in influencing the outcome.

Without dwelling further upon these fifteen cases, we wish to present certain statistics for the total one hundred and forty-four cases as having greater interest and as furnishing ad-

ditional and more adequate data for making deductions.

The average age in our series was sixty-seven, ranging between fifty-two and ninety. The average duration of symptoms, plainly attributable to the prostatic lesion, was five and one-third years, with a range between ten days and twenty-eight years. Twenty-six patients gave a history of symptoms extending over a period of ten or more years. Thirty-two of our cases had had acute retention once before admission, nineteen had had retention repeatedly, twenty-eight had had paradoxical incontinence lasting from a few days to many months, and sixteen had led a catheter life for varying periods. Sixty-six per cent of our patients, therefore, have entered the hospital with the obstruction, mechanically considered, fully developed. It is only too easy to visualize for them the progressive impairment of renal structure and activity, the increasing blood retention of toxic metabolites and the resultant deleterious effects upon all important bodily structures.

Thus, statistical compilation makes it evident that we are receiving our prostatic late, with the wear and tear damage of accumulated years too often vastly augmented by the virulent action of urinary toxemia in one degree or another. Surgery on the elderly patient has its problems inherently different and greater than on the robust young adult. But assuredly these old prostatics, as now admitted, constitute a class to themselves and is there any other class consistently comparable to them in the burdens they place upon the surgeon?

As we see it, there are just two methods available for having the average prostatic in better physical shape when referred to the urologist. The first is education among the laity, and the second a keener appreciation of prostate pathology, local and general, and more vigilance for these lesions on the part of the medical profession.

The man above sixty takes for granted a certain amount of infirmity as the due heritage of his years and more particularly holds the belief that at this age some urinary difficulty is to be expected and accepted. For this fixed belief we physicians are mainly responsible. Men must be taught that nocturnal frequency, usually the first sign of prostatic obstruction, is not physiological and that in most instances, where accompanied by a decrease in the size

and force of the urinary stream, prostatic disease should be suspected. It will be difficult to persuade most of them that such slight inconveniences may prove of serious import. At their age, they dread any operation and often refuse it even though urgently indicated. For example, we have had twenty-one patients with advanced prostatic lesions leave the hospital against our advice in spite of an excellent chance for operative cure. Yet this education must be accomplished else the prostatic may consult his family physician to all practical purpose as late as he does the urologist.

The family physician must play the leading role in the creation of a more rational attitude on the part of the elderly layman toward his urinary disorders. In fact, the great opportunity for improvement in the condition of the average prostatic, as first seen by the urologist, rests with the general practitioner. In the light of our own experience, we venture to make to him several suggestions, which may prove helpful.

First, we have gained the impression that frequently the medical attendant does not comprehend clearly the insidious changes that occur above a chronic obstruction at the vesical neck and hence the early evidence of prostatic encroachment upon the bladder outlet does not call to his mind the later potentialities of this development. Impatience is sometimes exhibited at the delay in the hospital before cystoscopy and at the much longer period of preliminary treatment, which in our series, has averaged thirty-one days. This we think would not occur were there a more general understanding of the local and remote pathology of prostatic obstruction.

Again, it is important to know that in some patients secondary symptoms may overshadow the urinary difficulties resulting from the underlying prostatic lesion. Four patients in our series were transferred from the medical service, where they had been originally entered, two for cardiac decompensation, one for a purulent bronchitis, and one with a diagnosis of diabetes. Upon the recognition of the constant large residual urine and the institution of appropriate bladder drainage with later prostatectomy, all four were essentially relieved of their main complaints. These are, no doubt, extreme examples, yet we wonder if remote systemic manifestations do not more frequently have their origin at the prostate than is commonly realized.

Finally, there is the matter of rectal examinations. We repeatedly stress to our students that no physical examination is complete without rectal palpation and certainly this applies where there is question of prostatic disease. Yet we have been struck by the rarity with which even extensive carcinoma of the prostate has been diagnosed before admission and this would not be true were not the terminal portion of the alimentary canal held so sacred against digital invasion. The frequency with which cancer of the prostate first develops in the posterior lobe demands routine rectal palpation if there is to be early diagnosis. In most cases of benign hypertrophy valuable information is obtained by the trained palpating finger. At the same time, it must be remembered that the median bar prostate and the one with only middle lobe enlargement, may feel entirely normal in spite of marked obstruction.

In conclusion, we offer the concrete suggestion that the family physician promptly refer the patients with evidence of early prostatic obstruction to the urologically trained surgeon. We make no attempt here to outline the guides for the latter's decision when to operate upon a given case. But we do insist that the urologist should have the opportunity for periodic observation of these cases from a date soon after the onset of symptoms. Only in this way can they be brought to operation at the strategic moment when obstruction has been proven steadily progressive but before systemic damage of any note has resulted. We believe that wide adoption of this program would secure an appreciable reduction in the morbidity and mortality of prostatic disease.

TUBERCULOSIS OF THE KIDNEY.*

By A. I. DODSON, M. D., Richmond, Va.
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Tuberculosis is usually not primary in the kidney, but depends upon a focus in some other part of the body. Dr. O. S. Fowler found that one in seven patients in tuberculous institutions around Denver showed bacilli in the urine. Autopsies on adult consumptives at the Pathological Institute at Prague, showed 5.6% to have renal involvement. Of 430 patients admitted to Piedmont Sanatorium, Virginia, three had definite renal tuberculosis. Evidence of extra renal origin was found in

*Read at fifty-second annual meeting of Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

71% of patients operated upon for renal tuberculosis at the Mayo Clinic since 1912.

The kidneys are constantly being called upon to remove micro-organisms from the blood. The fact that active tubercle bacilli are at times excreted by the kidneys without renal involvement is, therefore, not surprising. It is when some slight injury, mechanical, chemical or bacterial, lowers the kidney's resistance, that it becomes prey of this disease. This probably also explains the reason for the condition being at first unilateral; only one in seven or eight cases are bilateral when first seen.

A miliary tubercle is formed by proliferation of the connective tissue and endothelial cells and the production of giant cells enclosing one or more tubercular bacilli. Lymphoid cells and leucocytes are scattered thickly in the periphery of the lesion. These unite, forming nodules of varying sizes. The connective tissue in its effort to wall off the process and hyaline degeneration and inhibit the blood supply. Caseation, and sometimes liquefaction, occur. In this way is formed the caseo-cavernous type of tuberculosis of the kidney. (Fig. 3). Depending upon the resistance offered, the tuberculous areas vary in size from minute specks to complete involvement of the kidney parenchyma. Such an area in one of our cases had ruptured through the cortex, causing a perinephritic abscess with a resulting tuberculous sinus in the loin. In another, rupture occurred into the pelvis setting up a tuberculous pyelitis terminating in pyonephrosis. (Fig. 4).

Payne and MacNider, in a study of essential hematuria, have called attention to dense masses of fibrous tissue forming in the medulla as a result of infection. The contraction of the fibrous tissue forms an obstruction to the return flow of blood through the venulae rectae. Varicosities result which rupture, causing hemorrhage. This same condition most probably exists in tuberculosis of the kidney, causing hemorrhage. In one case there were nodules extending from the medulla through the cortex. The bleeding came from the corresponding calyces. There were no ulcerations or erosions, but the mucous membrane had a velvety appearance. (Fig. 1). In the cirrhotic type of renal tuberculosis there is almost complete replacement of the kidney parenchyma by fibrous tissue. This condition is seen in patients having very great resistance. (Fig. 2).

Tuberculosis of the kidney most frequently makes itself known by bladder symptoms. Often there is at first a simple polyuria due to over secretion of the affected organ. The patient notices that contrary to his usual habits he has to get up one or more times at night to void. Later, due to involvement of the ureter and bladder, urination becomes painful and more frequent. It is one of the tragedies of medicine that many of these people are treated for cystitis or nervous bladder until the disease has become advanced before an examination is made.

A dull aching pain in the region of the kidney was complained of in about 85% of our patients. One of them complained of pain in both sides, while the disease was very clearly limited to one kidney. Pain in the uninfected kidney is at times misleading. It is explained by physiologic hypertrophy stretching the capsule as the kidney takes on the work of its disabled fellow. There often is acute radiating pain caused by the ureter becoming blocked by blood clots or flakes of pus. Hemorrhage is noted in about 25% of cases. Occasionally it is the predominating symptom

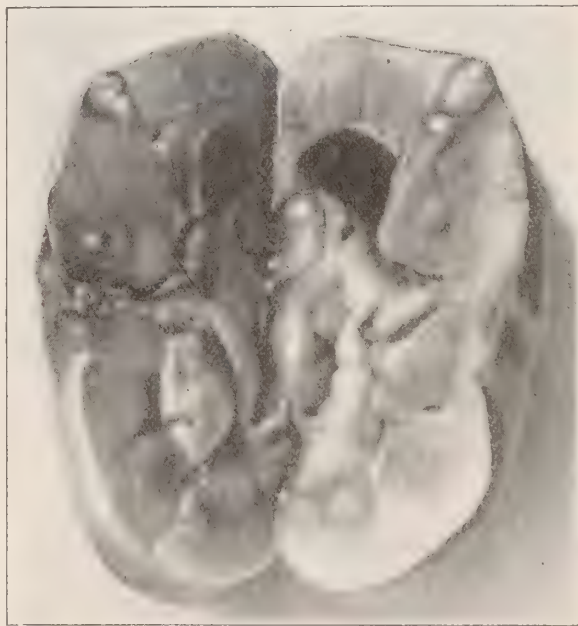


Fig. 1. Hemorrhagic renal tuberculosis. Mrs. V. A. S., had been sick only three months. Her chief symptom was hematuria. There was some pain in the back following exertion. Exploratory operation, May 3, 1915, nephrotomy; no disease found. Thought to be essential hematuria. Nephrectomy May 31, 1915, for persistent bleeding. Note the tuberculous nodules in the upper pole of the kidney and the bleeding from the corresponding calyces. The large scar is a result of the drainage following nephrotomy.

and may be mistaken for essential hematuria. The following case is an example:

Mrs. V. A. S. came to St. Elizabeth's Hospital, April 22, 1915, because of hematuria. She also complained of pain in the right lumbar region, increased on exertion. Cystoscopic examination showed a large amount of blood coming from the right side. May 3, 1915, the kidney was explored. The only pathology found was an adherent capsule, which was stripped up. The pelvis was drained through the cortex. She was relieved for a short time and then began bleeding as before. May 31,



Fig. 2. Tuberculous cirrhosis. Mrs. S.'s illness lasted twelve years. At first there was merely an increase in the output of urine. Later, she experienced indefinite pain in the kidney region on both sides. Cystoscopic examination showed the kidney to be completely functionless, with tuberculous ulcers around the corresponding ureteral orifice. Nephrectomy September 14, 1920. Note the almost complete replacement of the kidney parenchyma by fibrous tissue.

1915, a nephrectomy was done. Two tuberculous nodules could be seen on the cortex of the kidney. They extended down to the medulla and the bleeding was coming from the adjacent papillæ. She went home June 21, in good condition and has had no further trouble.

Lesions of the kidney have long been known to be the cause of gastrointestinal disturbances. Patients presenting themselves with indigestion or accumulations of gas and abdominal pain not definitely due to the gastrointestinal organs should have a thorough investigation of the genito-urinary system. When the disease has become advanced there is loss of weight, a feeling of lassitude and often afternoon temperature.

The diagnosis of tuberculosis of the kidney is dependent upon a carefully taken history

and physical examination, and the intelligent use of the cystoscope, the microscope and the x-ray. This history will bring out some or all of the symptoms mentioned above. By the physical examination we will note any evidence of tuberculous lesions in other parts of the body, costo-vertebral tenderness, and often palpable enlargement of the affected kidney. The two most frequent chronic diseases causing enlargement of the kidney are tuberculosis and malignant disease. Malignancy is almost always seen in the first and after the fourth decade of life. Therefore, palpable enlargements of the kidney between the ages of ten and forty are most apt to be tuberculous.

Merely a chemical examination of the urine means very little in the diagnosis of renal disease. Albumin is constantly present in renal tuberculosis and also is often seen following excessive protein diet, vigorous exercise, excitement and, sometimes, is due to faulty posture. It is to the microscopical elements that we must look for evidence incriminating the kidney with tuberculosis. Pus cells are always present in kidney infections and, where pyogenic organisms cannot be found by smear or culture, tuberculosis is to be strongly suspected, especially if the majority of the cells are of the mononuclear type. Tubercle bacilli can

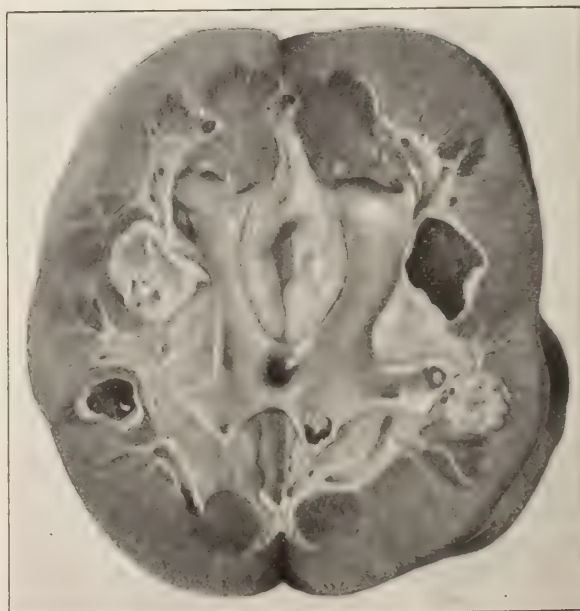


Fig. 3. Caseocavernous tuberculosis. Mr. J. D. E. had noticed indefinite pain in his back for several months. For a few weeks he had noticed bladder symptoms. Note the two large tuberculous cavities which have not yet ruptured into the pelvis, which is remarkably free from infection. Nephrectomy, February 25, 1921.

be found in about seventy per cent of cases if conscientiously looked for. The best method of obtaining a sediment is that of Forssell. The sediment is allowed to form for twenty-four hours in a high container, then the bottom part is centrifuged at 8,000 revolutions per minute. Guinea pig inoculation gives about the same percentage of positive findings but takes from ten days to six weeks for results to be obtained.

Every patient complaining of pain referable to the urological tract, of frequent urination with pus in the catheterized urine, should be cystoscoped. The earliest cystoscopic evidence of tuberculosis of the kidney is an area of hyperemia and swelling around the corresponding ureteral opening and extending out from it along the trigone. The hyperemia is dull red, giving the appearance of long continued irritation. There is at this stage a diminution in the contractility of the orifice. There may be seen small pearly tubercles near the orifice, which later coalesce, forming nodules with resulting necrosis and ragged ulcers. At this stage the orifice stands open, a round or irregular hole in the bladder wall, and the ulcers have spread to other parts of the bladder. The entire mucous membrane is hyperemic with many areas of granulations and ulcers. Sometimes the lower end of the ureter is so thickened and contracted that the trigone is distorted, causing considerable difficulty in locating the openings of the ureters.

In the majority of cases the cystoscopic appearance of the bladder not only points to the kidney involved, but is also an index to the amount of involvement. Usually we should avoid catheterizing the ureter of the healthy kidney. If indigo carmine is given intravenously it will usually be seen to appear from the normal kidney in four or five minutes, while a much longer time will elapse before its appearance from the diseased side. If then a large ureteral catheter is passed into the diseased ureter, the cystoscope removed, and a small rubber catheter is passed into the bladder, the difference in the number of pus cells and specific gravity of the specimens collected will often locate the lesion. The tuberculous bladder is always irritable and frequently cystoscopy with local anesthesia is impossible. Spinal anesthesia is very helpful in these cases. The following case illustrates this and also the great benefit derived from nephrectomy even in late cases:

Mr. R. E. W., admitted to St. Elizabeth's Hospital, January 13, 1921, complaining of dysuria, pyuria and frequency of urination. Family history and past history are uneventful. Present illness began January, 1920, following influenza. At first the only inconvenience was getting up once at night to void. A few months later he began to notice some pus in the urine and at the same time dysuria, but



Fig. 4. Tuberculous pyonephrosis. Mr. R. E. W. gave bladder symptoms extending over two years. This is a more advanced stage of the caseocavernous type. The caseous areas have broken down and invaded the pelvis. Note the ragged, chewed-up appearance of the pelvic wall.

no blood. He was treated by an osteopath at this time. He remained in a hospital from May 24, 1920, until July 1, 1920, during which time he was cystoscoped five times and had daily bladder irrigation of a solution of carbolic acid. During this period he was voiding about three times an hour. At the time of entrance to St. Elizabeth's, he was voiding five times during the night and eight to ten times during the day. He was a very weak, poorly nourished man. He had lost about thirty pounds in weight, and had definite evidence of pulmonary tuberculosis, though not very active. Blood was frequently noticed in the urine. Tubercle bacilli were recovered from the urine. Cystoscopy January 14, 1921, unsuccessful, because of irritability of the bladder. Cystoscopic examination January 18, 1921, under spinal anesthesia, showed the bladder to be markedly inflamed throughout with numerous ulcers in the region of the right ureteral orifice and much oedema of the trigone. There was considerable difficulty in

catheterizing the right ureter. No attempt was made to catheterize the left. Phenolsulphonephthalein from the right kidney the first hour, three per cent; second hour, one and one-half per cent. From the bladder, representing the left kidney, first hour, forty per cent; second hour, fourteen per cent. Tubercle bacilli were found in the urine from the right kidney without its being centrifuged. Right nephrectomy by Dr. J. S. Horsley, January 24, 1921. He left the hospital April 1, 1921, and five months later his bladder symptoms had greatly improved. He has gained twenty pounds.

Radiographic shadows in tuberculosis of the kidney are caused by the deposit of lime salts in caseated areas. The irregularity in their contour and density are in sharp contrast to the clear cut picture usually produced by stone. Pyelography should only be used when the diagnosis is in doubt. In such instances it is very helpful. Diffuse cortical involvement often causes irregular contraction of the pelvis. When the pelvis is invaded, the outline is uneven. The calyces are dilated and the borders appear ragged. If there are communicating cortical lesions, they will appear as irregular shadows, detached or communicating by a narrow line. The ureter will often appear tortuous with areas of constriction and dilatation. In complete caseation there may be a shadow outlining the complete cast of the kidney. Observations at the Mayo Clinic have shown that in about one in five patients x-ray is helpful in establishing the diagnosis.

In dealing with these people we must realize that they are tuberculous patients and not patients with tuberculous kidneys. They should have the same constitutional treatment that is afforded those suffering with tuberculosis of any other organ. In addition to this, the treatment is nephrectomy in unilateral involvement and also in bilateral involvement, when one kidney is slightly infected and with good function, while the other kidney is far advanced in disease and causing septic symptoms. I believe that tuberculous lesions of the kidney at times heal just as they do in the lung, but we have no positive proof that they ever heal spontaneously after becoming far advanced enough to cause symptoms.

Dr. George Dock, of St. Louis, after an exhaustive study of the literature, concluded that the possibility of spontaneous healing of tuber-

culosis of the kidney must be admitted, but could not be looked for as probable. He noted the observations of Simmonds, who found in an experience of 200 autopsies, that one-third of all cases of genito-urinary tuberculosis died of miliary or meningeal tuberculosis and that fifty per cent. of men dying of tuberculous meningitis had genito-urinary tuberculosis.

Dr. E. L. Young, of Boston, after a similar study concluded that the healing of a tuberculous focus in the kidney was impossible. He mentions three cases reported by Keyes, in which there was a remission of from two to seventeen years. In the case with the longest remission, autopsy showed the kidney to be completely destroyed. The other two patients had a flare up and the kidney was removed. These authors were able to find very few cases reported cured by non-operative means. The largest number was reported by Sardoe. There were twenty-one cases treated by tuberculin, five of which appeared cured. He did not consider the proof complete because of the possibility of long remissions.

Dr. Braasch has found from observing complete post-operative data on 435 cases on whom nephrectomy had been done, that the late mortality within five years is twenty per cent, with failure completely to cure twenty per cent, giving prognosis of recovery of eighty per cent and complete cure sixty per cent. It is also interesting to note that in his observations patients presenting evidence of healed pulmonary tuberculosis give highest percentage of complete recoveries, which seems an evidence of greater resistance.

Of our series of eighteen nephrectomies, six have been for tuberculosis of the kidney, and four of these seem to be entirely cured. One other patient who was confined to his bed for some time before his operation, eight months ago, has gained twenty pounds and feels quite well. His frequency of urination has decreased from three times an hour to once every two hours. The other patient still has considerable trouble with his bladder, but is in every other way improved. He was operated upon seven months ago. All six nephrectomies for renal tuberculosis made an operative recovery: four of these patients seem cured, and two at present are greatly improved.

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GRANULOMA INGUINALE.*

By CLYDE F. ROSS, M. D., Richmond, Va.

Granuloma inguinale (ulcerating granuloma of the pudenda, granuloma venereum, etc.), which until recently was supposed to be confined to certain tropical countries, but which we now recognize as existing and which has existed for time immemorial in Southern States, is defined by Stelwagon¹ as "A slowly progressive, destructive, serpiginous, ulcerative disease of the genito-anal and genito-crural regions," and by Goodman² as "An infectious, chronic, indurated, cicatrizing growth on or near the genitals, with no tendency to glandular involvement or serious impairment of health." In lieu of one case, which I will report (Case No. 4), having a granulomatous involvement of the nasal passages, throat and mouth and also one reported by Lynch,³ in which there was an involvement of the surface of the right cheek at the angle of the jaw, our terminology and definition will have to be revised as it is probable that this lesion will be found to involve any part of the body.

Granuloma inguinale was first reported by Conyers and Daniels,⁴ in 1896, and since that time by a number of other tropical observers as occurring very frequently in British Guiana, India, East and West Indies, Fiji, South America and other tropical countries.

Grindon,⁵ in 1913, reported three cases in St. Louis, diagnosis being based on clinical grounds. The subject was not revived until Symmers,⁶ in May, 1920, reported two cases from the Bellevue Hospital, from which he obtained an organism similar to the one isolated by Donovan,⁷ in 1905. Campbell,⁸ in 1921, taking up Symmers' work, reported three additional cases. Randall, at the meeting of the American Association of Genito-Urinary Surgeons in Richmond, May, 1921, reported eight cases. (This article has never been published). Lynch³ reported nine cases at the A. M. A. meeting in Boston this year.

So far as I know these twenty-seven cases are all that have been reported in this country to date, unless we include the three cases reported by Driscoll,⁹ in 1920, under the name of "Erosive Vulvitis," which in my opinion were really cases of granuloma.

There is a great diversity of opinion as to the cause of granuloma, and this question is at

present very unsettled. Wise (1906), Maitland (1906), MacLennon (1906), Bosanquit (1910), Driscoll (1920), and others believe it is due to a spirochete or spirillum of some sort, or a spirochete and vibrio (Driscoll).

Donovan (1905), Symmers (1920), Goodman (1920), Campbell (1921), Randall (1921), Lynch (1921), and others have obtained from these lesions an intracellular encapsulated organism in large mononuclear cells, which they believe is the etiological factor. These are sometimes spoken of as Donovan's bodies or cell inclusions. The origin of these inclusions is uncertain. Donovan says it is a protozoan, while Walker¹⁰ says it belongs to the bacillus mucosus capsulatus (Friedlander) group and others advance other theories. In two patients examined by us, we have been unable to locate these cell inclusions, which may have been due to our technique. On two occasions we have found the spirillum and vibrio as found by Driscoll, but whether these are the causative agents or merely a contamination of old lesions, I am unprepared to say. We are now trying to locate Donovan's bodies in tissue, where the smear was negative, and we hope later to report something more definite as to etiology.

Conyers and Daniels⁴ give the following description of the microscopic picture with which we agree and upon which we have depended along with clinical findings for a diagnosis:

"The mass of nodules is composed of round cells, with a large (but usually badly staining) nucleus, contained in a delicate reticulum of fibrous tissue. This mass is covered by epithelium in its greater extent and in the older and larger nodules merges gradually into a subjacent dense fibrous stroma, in which small masses of similar rounded cells are embedded. The growths are very vascular and the capillaries are much dilated, but there are no hemorrhages. There is no sign of suppuration of caseation, and no giant cells are found in any of the sections. The overlying epithelium has undergone certain modifications; it is usually intact; or cracked and, occasionally over small areas, absent or ill formed, and the cells of the rete malpighii are ill defined and swollen. None of the pigment so characteristic of the colored race is found in the deeper layers. In many specimens there is a proliferation of the interpapillary epithelium, in some, sufficient for columns of epithelial cells to appear to descend into the round celled growth. In others,

*From the Urological service, Medical College of Virginia. Read before the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

on the other hand, the papillae have almost disappeared from a more widespread proliferation of the epithelium. The hair follicles in many cases share the epidermic thickening and the hairs grow strongly and are not changed in color. In a section of a small nodule, the round cell mass will be found to be roughly wedge-shaped, the base of the wedge being toward the skin, the growth ascending with the vessels into the papillae."

The lesion begins in some cases as a papule, pustule or nodule, which ulcerates and granulates. In other cases the infection seems to be engrafted on some pre-existing lesion, such as suppurating inguinal adenitis. It presents itself as a light red mass of granulation tissue, which in places ulcerates and heals, leaving firm raised hairless cicatricial areas covered by very thin epithelium. These granulation masses vary in size but are usually more raised at the margin and depressed in the center. They extend both by continuity and contiguity of tissue and are at times covered by a thin dry pearly scab. The secretions differ; in some instances being very scant and in others profuse and fetid. The scar tissue often contracts and produces deformities, especially so, if it involves the urethra, vagina, anus or rectum. The lymph nodes, as a rule, are not involved. Subjective symptoms are slight, although one of our patients complained of a good deal of pain. All of our patients have been in the colored race. Lynch³ and Randall both reported the lesion in white males. The disease seems to be as prevalent in one sex as another and is a disease of sexual maturity.

Heretofore, our first impression when seeing these lesions has been that they were syphilitic, which fact was further borne out by a large percentage of the patients having a positive Wassermann. Nearly all of our patients, whether they had positive Wassermans or not, had received treatment for syphilis with no improvement. Until the organism causing the disease has been positively identified, the diagnosis will rest upon clinical findings, and pathological examination of sections and, as a last resort, upon therapeutic results.

Tuberculosis cutis will also have to be differentiated. Conyers and Daniels⁴ believe it to be tuberculous and LeDantic¹¹ claims that he produced tuberculous lesions in animals by inoculating them with granulomatous material. The absence of the tubercular bacilli, the clinical

and the pathological findings, should serve to distinguish granuloma from tuberculosis. The presence of glandular enlargement, metastasis, and the pathological picture should differentiate malignant diseases from granuloma.

The results of the tartar emetic treatment of granuloma were marvelous, and it is in our experience a specific. In some lesions though, where the granulation tissue is very abundant (Case No. 1), radical removal of the mass followed by tartar emetic would seem to yield quicker results.

The U. S. P. Tartar Emetic (antimony and potassium tartrate) in sterile distilled water was used intravenously in one per cent. solution. The initial dose was 5 c.c., and was increased 1 c.c. each dose until 10 or 12 c.c. were given at a dose. This amount was diluted by sterile distilled water up to 25 c.c.'s, and injected three times a week. Improvement is usually noticed after three or four injections. Tartar emetic in some patients caused immediate vomiting, which lasted only a short while. To prevent this, all patients were instructed to return for treatment with empty stomachs. The oral administration of tartar emetic has not been attended with visible improvement. After lesions have healed, treatment should be continued weekly for three months to prevent recurrence. This after treatment is very essential and should not be neglected.

All of our patients responded nicely to treatment with the exception of case No. 1. All of them are cured at least temporarily except case No. 1, and case No. 5 is practically well at this time. The patients have not been under observation long enough yet to state definitely how permanent the apparent cures are. Case No. 3 was apparently cured twice by surgery, once for three years and a second time for five months. These lesions may recur, and it may be found necessary to repeat treatment in courses at intervals for years, just as we do in syphilis, before we can say that a positive cure has been produced. All we can say is that at least the immediate effect of tartar emetic in these conditions is brilliant.

CASE NO. 1. November 27th, 1920. Male Colored. 50 years old. Native of Virginia. Had gonorrhea 12 years ago, denies syphilis. About 4 months ago patient noticed an ulcer on coronal sulcus which granulated, the resulting œdema causing a phimosis. The granulating tissue penetrated the prepuce and there is present a large granulating mass about 4

c.m. in diameter. The mass causes no pain except when in contact with clothes. There is a foul profuse discharge. Epitrochlear and inguinal glands enlarged. Patient's general condition not affected. Several examinations for Donovan's bodies were made which were negative, but one smear showed a spirillum. Wassermann reaction negative. Diagnosis made from section.

Irregardless of negative Wassermann, patient was given three doses of arsphenamine, and three of mercury salicylate, with no improvement. Tartar emetic treatment was then begun. Healing was slow, but there was improvement. Patient was advised to have lesion removed surgically and tartar emetic continued, but refused surgical intervention. Tartar emetic finally caused vomiting and after taking 40 grs. he refused further treatment; epithelialization has begun.

CASE No. 2.—November 30, 1920. Male. Colored, thirty-four years old. Native of Virginia. Lived in Richmond all his life. Gonorrhoea and ulcer on prepuce years ago. In 1911 patient had a suppurating left inguinal gland which ruptured, leaving a granulating surface. This extended by continuation of tissue across pubis into right inguinal region down both folds to perineum, involving anus and continuing up to sacrum. Lesion was not painful and had had no influence on general condition.

Lymphatic glands were normal. Wassermann reaction was negative, although in previous years patient had taken innumerable doses of arsphenamine and mercury, with no improvement. No examination was made for Donovan's bodies, but was negative for spirillum. Clinical diagnosis confirmed by section.

Tartar emetic treatment was begun December 8th, 1920; sixteen grains were given, and January 20, 1921, lesions were healed. Treatment was continued for some time after lesions healed and there has been no recurrence to date.

CASE No. 3.—December 13, 1920. Male. Colored. Forty years old. Native of Virginia. Has lived in Virginia and the neighboring States all his life. Has had both gonorrhoea and syphilis. About ten years ago a small pustule appeared on pubis, which granulated and spread over both inguinal regions. This area was removed by excision. In three years lesion reappeared over same surface and extended down both inguinal folds and over perineum.

This was then thoroughly cauterized when it healed, but in five months returned (about five years ago), and spread until at the present time it involves the right inguinal region, the base of the penis, going down both inguinal folds on to perineum and up on sacrum. There is white scar tissue over pubis and partially over both inguinal regions. Lesion is not painful and general condition good; inguinal glands not involved.

During his various treatments he has had a positive blood Wassermann and has taken treatment with no improvement in lesion. When seen by us, his Wassermann was negative, and he has just completed a course of eight doses of arsphenamine.

Pathologist confirmed clinical diagnosis. No search made for Donovan's bodies or spirillum. Tartar emetic treatment was begun and, after taking fifteen grs., his lesions were healed. Against our advice he left the city and did not continue his treatment, which in our opinion is very necessary. He returned on May 6, after an absence of four months, with a slight recurrence in the right inguinal fold. Lesions were again healed on June 24th, after twenty grs. more of tartar emetic.

CASE No. 4.—December 17, 1920. Male. Colored. Thirty years old. In 1910, about one month after being kicked by horse, there appeared on the pubis a blister about the size of a dollar, which granulated and spread down both inguinal folds. About four months after the ulcer appeared on pubis, a lesion, which he termed "chancere," appeared on the frenum of prepuce, for which he was circumcised, but wound never healed. In about one year the lesion on the penis and the one on pubis became confluent. Patient says he knows lesion on prepuce was of venereal origin, for he was cohabiting with a woman who had the disease. Patient suffered a great deal when not under influence of whiskey. Lesions were not sore to touch, never bled much, and very little pus formed.

During these years he tried all kinds of remedies, with no relief, among which were twenty-seven doses of arsphenamine. Was living as husband with a woman who never became infected, and does not know of having conveyed disease to any of numerous other women with whom he stayed.

In 1917, lesions appeared in nose, throat and mouth. Patient lost sixty pounds in weight until he only weighs 104 pounds. Diagnosis

was made and tartar emetic treatment instituted. Patient immediately began to improve. After five weeks' treatment and administration of twenty grs. of tartar emetic, lesions were healed, those in mouth and throat healing in two weeks. At present, patient weighs 170 pounds and is enjoying good health.

CASE No. 5.—December 20, 1920. Male. Colored. Age twenty-one years. Native South Carolina. Has lived up and down the coast but never outside of U. S. Has had gonorrhoea a number of times but denies syphilis. Two years ago had a suppurating inguinal gland on left side, which was first opened and then extirpated, but wound never healed. There appeared soon after an ulcer on prepuce, for which he was circumcised and wound healed nicely. Wound in groin granulated and extended down left inguinal fold and over on scrotum. Lesion had been cauterized and certain areas had healed, but still existed in left groin, on scrotum and perineum. Lesion caused no pain, and patient's general condition not impaired. Glands were negative. Wassermann was negative, but had taken syphilitic treatment with no improvement; no examination was made for Donovan's body, but spirillum and fusiforms were present.

Section confirmed clinical diagnosis, and tartar emetic treatment was begun. After taking eleven grs., lesions were nearly healed. Patient, being of a roving disposition, disappeared, and on July 13, 1921, he returned with a recurrence, more treatment was given, when he again disappeared, and returned again in September, 1921. He is now undergoing treatment and is about well again. His lesions quickly disappear under treatment.

CASE No. 6.—April 6, 1921. Male. Colored. Forty-three years old. Native of Virginia, where he has lived all his life. Seven years ago had a "hair cut" on glans penis, which ulcerated. Two years later was circumcised and his penis (he claims) retracted. Patient says it did not slough off. In any case, wound did not heal, but lesion extended up right inguinal region to the anterior superior spine of os innominatum, down both inguinal folds over perineum, up on sacrum and around right nates. Lesions itched, but not painful. General condition fair. Inguinal glands slightly enlarged. Wassermann was negative.

Pathological report confirmed clinical diagnosis. Tartar emetic treatment instituted, and

after taking twenty-two grs., lesions were healed and have remained so to date.

CASE No. 7.—August 1, 1921. Female. Colored. Twenty-eight years old. Lived in Richmond, Va., all her life. Menses began when thirteen years old, and have been regular. Gave birth to one child, thirteen years ago, which was born dead. No subsequent pregnancies. Ten years ago, patient noticed on perineum, near anus, a small papule, which ulcerated and spread forward over perineum, labia, pubis, inguinal folds and inguinal regions. Lesion burns some but is not painful. Patient's general condition has remained good, no glandular enlargement. Wassermann reaction negative. Examination for Donovan's bodies negative.

Clinical diagnosis confirmed by pathological report. After four week's tartar emetic treatment, during which time fifteen grains were administered, lesions were completely healed.

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Professional Building.

FOCAL INFECTION OF THE URINARY TRACT.*

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In 1818, Dr. Benjamin Rush made the following significant statement: "I can not help thinking that our success in the treatment of all chronic diseases would be very much promoted by directing our inquiries into the state of the teeth in sick people and by advising their extraction in every case in which they are decayed."

The soundness of this advice has been amply proved by the success which has followed the

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extraction of diseased teeth and the proper treatment of suppurative conditions in the mouth and throat. However, quite recently the fact has been demonstrated that the urinary tract at some place may, and does, harbor organisms of various kinds which either directly or indirectly produce not only local but constitutional diseases, the latter manifesting themselves in varying degrees and character, chiefly in the form of rheumatism, neuritis, diseases of the central and peripheral nervous system, gastric disorders, heart diseases, etc. For the purpose of illustrating, I wish to submit a few case reports demonstrating the subject of this paper which have occurred in my own practice and in consultation, emphasizing the fact that the urinary tract does play quite an important role in the etiology of certain diseases and that the urologist may be of material assistance in fixing the responsibility.

The male patient, naturally, because of the ducts and openings into the prostatic urethra, has a greater possibility of an infection than the female, though, of course, the kidney and ureter conditions are the same. The manifestations, as a result of a urological infection, should be divided into acute and chronic, for convenience of description. Every practitioner is familiar with the condition of acute gonorrhoeal rheumatism characterized by chills, fever, swollen and painful joints, or an acute neuritis extending over the course of one or more nerve trunks, or the individual who complains constantly of pain in the back or referred to various portions of the body, either constantly or intermittently; accompanied with some urinary disturbance. The facts remain the same so far as infection is concerned, regardless of where it is located, if the infection is being taken up in the circulation and the patient is not capable of throwing off the toxins.

The locating of a urinary infection is not a simple procedure in every case, though by elimination it is quite possible to definitely determine it, and the exact nature, by the use of the various apparatus now commonly utilized for making necessary examinations.

The writer's experience has proven that the following conditions do at times cause the development of constitutional diseases, which were credited to focal infection of the urinary and generative organs: Balanitis, balanoposthitis, prostatitis, stricture of the ureter, pyelitis, chronic gonorrhoea, vesiculitis, verumon-

tanumitis, pyelonephritis, and hematogenous infection of the kidney, as exhibited by the following case histories:

CASE HISTORY No. 2062.—Major C. C., U. S. M. C. White, single; age 38. Seen in consultation May 1, 1918; patient complaining of arthritis. Has always enjoyed good health, with the following exceptions: At the age of fourteen had an attack of appendicitis; was not operated upon and had no recurrence. In 1909 had a purulent urethral discharge for two days. The discharge was examined microscopically and pronounced negative for gonococci. There was no treatment instituted and the condition cleared up. No other history of any venereal infection. In 1914, contracted malaria and had several recurrences and apparently had been successfully treated and cured. In 1915 patient had an acute attack of arthritis, with some swelling of joints involving the right shoulder, right elbow and right hand, accompanied with fever. This responded to treatment very promptly. No further trouble of a similar nature until December, 1917, when he had another acute attack involving the same joints, lasting for about two weeks. In March, 1918, had a similar attack involving the same joints. Patient's teeth have been X-rayed and reported negative with the exception of one having a suspicious infection. Throat, nose and sinuses negative. A complete physical examination, including an X-ray of the chest, was negative. Heart normal and negative. No digestive disturbances. Bowels regular. No tropical infections or dysentery. Abdomen, throat, glands, thyroids and reflexes negative. Blood pressure, systolic 118, diastolic 84. Blood count normal and negative for malaria. Urinalysis normal with the exception of trace of albumen and an occasional pus cell. Scrotal contents normal. Prostate negative and normal. The prepuce is extremely long. Meatal secretions contained a great number of staphylococci and pus cells. Prostatic secretions normal in appearance and negative for any bacteria and pus. Wassermann test negative. Gonorrhoeal complement fixation test negative. It was recommended that the patient be circumcised, for the reason that it was my opinion that the patient had repeatedly had a balanitis, which bacterially infected the urethra and in turn caused infection of the blood stream, producing the arthritis. Circumcision was done and since that time the patient has not had any return of arthritis.

CASE HISTORY No. 3237.—H. C. S., July 6, 1920. White, male, single, age 31. Complaint, nervousness. Family history negative. Past history negative, except malaria and tonsillitis some years ago. Tonsils removed in 1918. Present history, two or three years ago, while in the army, thought to be due to overwork and irregular life, had periods of indigestion; no pain, no gas; taking of soda and milk of magnesia would relieve. Heavy mental or physical work caused great depression, sleeplessness, irritability and exhaustion. Relaxation and diversion would apparently put him on his feet. Patient was seen by several reputable medical men and diagnosis of vagotonia was made. Present symptoms consisted of severe frontal headache and at times discomfort in the region of the stomach, and states that right frequently there is mucus in the stools. There is no history of vertigo or convulsions. Eyes, ears, nose and sinuses negative. X-ray of teeth negative. Scanty perspiration. Examination of heart, lungs and abdomen negative. Urinalysis shows an occasional pus cell, otherwise normal. Temperature normal, pulse normal, blood pressure 108-80. Weight, 135 pounds; no alopecia; pupillary reflexes normal; no enlargement of lymphatic glands; reflexes normal; hemaglobin, 80; Wassermann negative; sputum analysis negative; spinal fluid negative; gastric contents normal after test meal; X-ray of gastrointestinal tract after bismuth meal does not show any abnormalities. Scrotal contents normal; no varicocele; prostate slightly enlarged and boggy; first glass contained considerable amount of shreds and pus, second and third glass clear. Meatal secretions negative; prostatic secretions contain a great many pus cells, micrococcus catarrhalis and staphylococci. Diagnosis of prostatitis due to a non-specific infection was made and treatment consisted of massage of the prostate and vesicles, followed by urethral and bladder irrigations, and autogenous vaccine. Patient after two weeks began to improve and at the end of the two months was cleared up of his prostatic infection and at the same time the nervousness disappeared. This man had not been able to apply himself to his business for two years. He has resumed his normal occupation and has been at work for four months.

CASE HISTORY No. 3417.—Mrs. H. O. B. Age 27, white, female, married, December, 1920. Patient complains of pain and soreness in sides

and back, especially in the right side. Family history negative. Past history: Patient has had chills and fever for a period of seven years at varying intervals; slight tonsillitis at times, otherwise negative. Patient states that she has had the usual diseases of childhood. Has never had any cough, palpitation, or œdema of the limbs. Has had at times gas in the intestines. No jaundice; no dysentery. Occasionally has had night sweats. Patient voids every two hours during the day, apparently normal quantity; rarely rises at night. No pain or burning on voiding. Recently has had some urinary disturbance, manifesting itself with a frequent desire to urinate. Has not passed any blood or stone. Patient is married, has four living children, no miscarriages. Present history: Beginning April 1, 1920, patient has had pain in region of both kidneys and at times quite severe, necessitating the administration of hypodermics for relief. The attacks would come on suddenly with a sharp pain in the lumbar region, not always on the same side, however, more frequently on the right side than the left. Pain radiated down over the course of the ureters. After administration of hypodermics relief would be obtained, though over course of ureters would be sore and tender for two or three days. Patient stated that she was never free of pain entirely. Examination of patient shows that she is fairly well developed. Pupil reaction normal. Mouth and teeth normal. Tonsils did not appear to be diseased. Tendon reflexes appeared to be equal and normal. Temperature and pulse normal. Blood pressure 104-62. Heart and lungs negative on examination. Abdomen negative except there is considerable tenderness over the region of the right kidney. Blood count normal. Wassermann negative. Urinalysis negative with the exception of a trace of albumen and an occasional pus cell. Cystoscopic examination showed that there is no abnormality or disease of the bladder; capacity normal. The left ureter admitted a normal size catheter to the pelvis of the kidney. The right ureter could not be entered with the normal size catheter, but with much difficulty a No. two filiform bougie was introduced and dilatation done up to No. four French. Twenty cc. sodium bromide solution injected into the pelvis of the right kidney and submitted for X-ray examination, which reveals the pelvis of the kidney to be normal in contour, though slightly enlarged. The up-

per portion of the ureter was dilated and tortuous, though no angulation. Analysis of the specimens showed the right ureter specimen to contain abundant pus cells and culture gave a profuse growth of staphylococci. Left ureter specimen negative upon examination and culture. The conclusion drawn in this case was that the patient had a stricture of the lower portion of the right ureter, causing a stagnation of urine in the pelvis and upper ureter producing hydronephrosis and hydroureter, and thereby responsible for the infection. The patient was put on autogenous vaccine and the ureter dilated at intervals. Her symptoms have disappeared, the urine is completely cleared up and the patient is able to perform her usual duties.

CASE HISTORY No. 2087.—W. I. S. Age 45, white, married. Referred for examination and diagnosis, June 17, 1918. Complains of pain in back. Family history reveals father died of tuberculosis; otherwise negative. Patient's history shows that he had typhoid fever twice during childhood, several attacks of malaria, pneumonia and rheumatism during his early twenties. Patient occasionally has frontal headaches of severe character, relieved by sleeping. Says headaches of this nature are common for his family. Vision good. Ears, nose and throat negative. Vertigo at times. Teeth in good condition. No coughs; no palpitation; no dyspnoea or oedema; no swelling of limbs. Appetite good. Digestion good. Occasionally has had to take hypodermics for pain in back. No constipation. Had jaundice in 1901, which lasted for four months. Voids frequently but freely; light pain and burning of the urethra during voiding; rises two or three times at night; has not passed any blood or gravel. Present illness dates back four weeks, beginning with pain in back, accompanied with chill and fever; temperature continued for two days, pain continued after cessation of chills and fever. Pain is located in the small of back on both sides, but does not radiate over course of ureter nor down the thighs. Physical examination: Weight, 125 pounds. Patient of spare frame, five feet, ten and one-half inches tall, looks emaciated; color of skin sallow. Examination of eyes, nose, throat and mouth negative. Thyroid is palpable, not increased in size. Slight tremor of extended fingers. Deep reflexes present. Knee jerks present, but sluggish. Pulse is regular. Arteries somewhat hardened. Blood pressure

96-66. Heart normal in size, and no pathology indicated on auscultation. Chest symmetrical, expansion symmetrical. Liver dullness normal. Lungs negative on percussion and auscultation. Abdomen symmetrical, no bulging of the flanks, no pain on deep pressure. Neither kidney palpable. Urinalysis: bladder specimen negative with the exception of a heavy cloud of albumen and abundant pus cells. Blood, Hb., 85%; W. B. C., 23,000; Pmn., 83%; Sm., 14%; Lmt. 3%. Negative for malaria. Wassermann, negative. Spinal fluid shows cell count of five to the field. No increase of globulin. Spinal fluid Wassermann negative. Cystoscopic examination: Bladder capacity normal. Bladder generally congested. Both ureter openings congested, right more than the left. Catheter introduced into both ureters to pelvis of the kidneys. One cc. phthalein administered intravenously; appeared right side eight min.; thirty min. secretion, 8%. Appeared left side 5 min.; 30 min. secretion, 12%. Laboratory: Bladder specimen negative except for abundant pus cells, good many colon bacilli, an occasional granular cast. Right ureter specimen; abundant pus cells, colon bacilli, and occasional granular cast. Culture: Heavy growth colon bacilli. Left ureter specimen, occasional pus cell. Culture, negative. Both specimens negative for T. B. X-ray of entire urinary tract negative for stone or other pathology. Diagnosis, pyelitis of the right kidney, with secondary cystitis.

August 2nd. Since June 21, patient has been treated for pyelitis, by lavaging of the right kidney with silver nitrate. Autogenous vaccine, and dietetic measures. Upon starting the treatment, patient developed extreme nervousness, excitability, hysterical at times, rambling in his expression of thoughts, and other disturbances which suggest toxic psychosis. August 23rd. Patient has been on above referred to treatment since August 2d, during which time his mental condition remained somewhat the same, but physically and neurologically has improved.

August 10th. Patient appears to be normal physically and mentally, has gained twenty-five pounds in weight. Urinalysis: Bladder specimen shows an occasional pus cell, otherwise negative. Both ureter specimens negative, on culture and microscopically.

April 6th, 1920. Patient has been proceeding along his normal line of vocation, as to-

bacco buyer. Physically and mentally is normal. Urinalysis, negative.

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UROLOGIC PROBLEMS OF INTEREST TO THE GENERAL PRACTITIONER.*

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A study of all the urologic problems that confront the general medical practitioner would take more time than I am permitted to consume, but a few of the most urgent can be considered rather briefly with profit to our patients and ourselves. These problems owe their being primarily to the fact that the urologic tract is so situated anatomically that the usual methods of physical diagnosis—palpation, auscultation and percussion—are of little or no value in the determination of its pathologic conditions.

Urologic phenomena, such as hematuria, pyuria and pain in or near the genito-urinary tract, cannot be accounted for by these methods; nevertheless it is not uncommon to meet with cases that have been treated for long periods of time without a definite diagnosis, or in fact, a serious attempt at a definite diagnosis having been made.

Perhaps the most flagrant example of this unfortunate practice is to be seen in those innumerable cases in which a diagnosis of cystitis has been made and bladder irrigations and urinary antiseptics administered for long periods without relief to the patient. When these patients reach the urologist, as they do eventually, he probably will find the so-called cystitis merely one of the secondary symptoms incidental to the presence of a pathologic lesion of serious character, such as tuberculosis, tumor, stone, or stricture.

The subject of hematuria offers a much more striking example. To the urologist, hematuria is a symptom, not a disease. It means that somewhere in or near the urologic tract an active pathologic process is going on, which is making itself evident by the presence of blood in the urine. It is no exaggeration to say that in probably forty per cent. of cases of hematuria, the bleeding is symptomatic of the presence of a tumor somewhere in the urologic tract. But the average medical practitioner

always does not take the trouble to find out what is causing the hematuria or where it is located. He may put the patient to bed and order an internal antiseptic or styptic, and when the hemorrhage stops, as it usually does under the influence of rest, he is apt to feel satisfied with the success of his treatment. But it is a fact, nevertheless, that he does not know what causes the bleeding, and it may be accepted as axiomatic that if he does not know the cause of the hemorrhage he surely cannot do anything that will help his patient materially.

The hematuria may not return for months, or even for years, but in that interval precious time has been lost. The small benign papilloma has grown large and has become malignant; before its potential malignancy became active it could readily have been destroyed, perhaps never to return, by the Beer method of fulguration through the cystoscope; but the passage of time has brought about a change in the character of the growth so that we now are dealing with a carcinoma that may require radical measures with little or no chance of ultimate recovery. The small calculus which could have been removed from the bladder through the cystoscope, has grown to large proportions and requires surgical measures for its removal. The unilateral renal tuberculosis, amenable to surgical measures with a large degree of success, now has become bilateral, with greatly reduced chances of recovery. In other words, what was a comparatively simple matter in the beginning has been permitted to become a serious menace to the life of the patient, because a diagnosis was not made, or even seriously attempted, at the proper time.

These illustrations can be repeated with many variations, but they all point to the single moral—that in the practice of urology, at least, the first and most important problem which confronts the medical practitioner, is the absolute necessity of making a correct diagnosis. At least he should attempt it with such means as his experience and training suggest; if necessary, expert assistance must be secured. But the diagnosis must be made, and the sooner it is made, the better for all concerned. We are past that stage in medicine, where a name of a clinical entity satisfies. We must know the cause. No one should be allowed to go on after an attack of hematuria without a definite diagnosis having been made by the medical attendant.

*Read by invitation before the Norfolk County Medical Society, Norfolk, Va., October 31, 1921.

But how shall the medical attendant meet this difficult problem? He surely does not meet it by putting the patient to bed and prescribing an internal antiseptic. The ideal solution would consist in a reasonable amount of familiarity with the cystoscope and its manipulation. However, if the practitioner is too busy with his multifarious duties involving many specialties to acquire some cystoscopic experience, it is sufficient that he acquaint himself with the possibilities and dangers that confront his patient because of his limitations, and that he then act as his conscience dictates.

If he once understands the great danger in which the absence of a diagnosis places his patient, he will find the means of avoiding it. There are certain measures upon which he can rely, which will aid him in a very fair degree towards establishing a working diagnosis until the exact diagnosis can be made. Among these may be mentioned the kidney function tests, the microscopic examination of the urine, and the so-called urinary tests. Any medical practitioner can do these important tests without the need of special training or acquired skill.

The Five Glass Catheter Test (Wolbarst), which I have described in previous publications, will be found of special value in these circumstances. It does not take the place of the cystoscope or the ureteral catheter, but it tells us whether the blood has its origin in the urethra or in the upper urinary tract, and this is a big step forward. If by this means the practitioner has determined that the blood is not derived from the urethra, but from the bladder or higher up in the urinary tract, he undoubtedly will take the necessary steps to have his patient radiographed and cystoscoped, and the ureters catheterized, if necessary, thus completing the diagnosis. His problem will be solved in a great measure if he always will remember that hematuria is a symptom, not a clinical entity; that there is no substitute for cystoscopy and ureteral catheterization, and that anything else is mere guesswork and of no substantial value to the patient.

What has been said with reference to hematuria applies with equal and perhaps greater force to the subject of pyuria, except that the problem is somewhat more complex. Pus found in the urine may have its origin in any part of the common urogenital tract, but unlike hematuria, in the male at least, the

origin of the pus is in the urethra or the genital adnexa, in the vast majority of cases. In pyuria unaccompanied by definitive symptoms, the five glass catheter test demonstrates its greatest field of usefulness. When used properly, this test determines for us in a few moments whether the pus or shreds in the urine have their origin in the anterior urethra, posterior urethra, prostate or in the upper urinary tract.

If by means of this test it is found that the pus is derived from the bladder or upper urinary tract, the practitioner should at once realize that he is dealing with a condition in which the life of the patient is endangered, one that requires the best diagnosis and surgical care that can be obtained. As in the case of hematuria, there can be no substitute for cystoscopy and ureteral catheterization in making a diagnosis as to the cause of the pyuria.

Less important so far as endangering life is concerned, but more frequently encountered in the male, is the pus resulting from gonococcal infection of the urogenital tract. The necessity of determining the character and location of the lesion constitutes probably the most frequent of all the problems which confront the practitioner in his daily work.

In acute urethral inflammations it is not difficult to determine the source or the character of the discharge. A purulent discharge at the meatus offers indisputable evidence of the urethral origin of the pus, and the microscope identifies its bacteriologic character; but it is important to remember that pyuria can have more than one source simultaneously. While the meatal discharge originates in the anterior urethra, there may be another pus focus elsewhere at the same time, in the prostate, seminal vesicles, bladder, ureter, or kidney. A man may have an acute gonococcal infection of the urethra superimposed on a pyonephrosis due to a silent kidney stone or tuberculosis and it is a problem of considerable importance to determine whether such multiple infection exists. Bacteriologic examination of the meatal discharge will show the presence of gonococci, whereas the pus obtained from the bladder urine uncontaminated by the urethral discharge will be negative as to the gonococcus, but may show the presence of tubercle bacilli or other pyogenic organisms from the upper urinary tract.

It is the duty of the practitioner to avail himself of every possible diagnostic means--

the clinical history, the microscope, and the various urinary tests—to secure this information; but never for a moment should he forget the possibility of their occurrence. Failure to do so may entail serious consequences. It therefore goes without saying that the possession of a good microscope and a knowledge of how to use it constitute an essential element in the diagnosis and treatment of urethral inflammations. Many unsolved problems can be traced directly to the absence of diagnostic data, which the microscope and the urinary tests readily supply; hence, their great importance to the medical practitioner.

The diagnosis of acute gonorrhea having been made, it is a simple matter, by having the patient void into two glasses, to determine whether the inflammation is confined to the anterior urethra or has spread to the deeper structures.

A clear second urine means an anterior infection; a purulent second urine signifies posterior involvement, with its possibilities of grave complications. Any doubts as to the extent of the inflammatory process will be removed by the simple expedient of washing out the anterior urethra thoroughly until the washings come out clean, and then having the patient void into a clean glass. If the voided urine is clear, the infection is anterior; if it contains pus, the posterior urethra is involved. A knowledge of this simple procedure and its frequent application will do much to spare the practitioner some of his most frequent problems, namely, the cases of unrecognized posterior gonococcal infection.

It is these chronic gonococcal infections, that is, cases that have persisted for ten or twelve weeks or more without cure, which present the greatest difficulties. A most important element in the diagnosis of these cases is the history. Frequently repeated attacks usually mean a urethral stricture, chronic prostatitis or vesiculitis, or all combined. It is important to differentiate between repeated new infections and recurrences of old inflammatory processes. Persistence of the pus and discharge in spite of conservative and careful treatment should establish a strong suspicion that we are dealing with a recurrence of a chronic infection instead of a new one. Further investigation probably will confirm this suspicion.

The important thing to remember is that stricture, prostatitis and vesiculitis generally

persist as a low grade inflammation, and suddenly awaken from time to time to annoy the host and plague his medical attendant; and, unless the latter is prepared to recognize their presence, he adds another bothersome urologic problem to his collection.

The "morning drop" is the *bete noir* of the conscientious practitioner who treats gonorrhea in the male. It is associated usually with shreds in the urine, though there are cases in which pus predominates. It is essential for the practitioner to satisfy himself of the origin and bacteriologic character of the pus and shreds before undertaking the treatment of these cases. The urinary tests have no equal for this purpose. He should examine carefully for stricture, not by passing a sound into the urethra, but with a bulbous bougie or the Otis urethrometer, which is far better and more exact. He also should examine for prostatitis and vesiculitis, by vigorous massage on a full bladder and studying the urine voided after massage. The urine may be quite clear, or may show a few fine shreds, but the urine voided after massage of the prostate will contain a large amount of pus and more or less detritus, the latter often assuming the form of a prostatic follicle. Gonococci also may be found in this massaged secretion.

The chances are that one or more of these conditions will be found in every case of "morning drop" that he encounters, and he will at once see the futility of giving such patients a syringe and a bottle of something to be used three times daily.

There are certain therapeutic pitfalls which add materially to the difficulties of the practitioner. Principal among these, in acute gonorrhea in the male, is the local treatment. It is quite customary for the physician to prescribe a solution of some kind, with orders to the patient that he inject himself at certain intervals during the day, and to return for observation in a week or when the bottle has been emptied. This may be an excellent way of conserving the patient's financial resources, but it is not the best way to help him as far as his urethral infection is concerned. It is difficult to understand the rationale of this procedure. Many things can happen in a week or ten days, and it has been my personal experience that most of the cases with complications that I have seen, have previously been treated in this manner.

I believe the physician should see his patient

with acute gonorrhea at least once every day—in some cases twice daily. He should administer the injection solution himself and he should be able to do it better and more skilfully than any patient can do it for himself. He should carefully study the progress of his case from day to day; he should change the strength and the character of his solution according to the varying indications, and his solutions should be made fresh daily in sufficient quantity to serve during the day they are prepared, and no longer. Stock solutions, especially of the popular silver salts, not only are of no value, but are actually injurious to the inflamed urethra.

The prostate should be examined, not massaged, from time to time, to see whether it shows any evidence of congestion or inflammation; if it does, an occasional gentle massage and an intravesical irrigation will serve to prevent serious involvement of this organ with its possibility of complications.

It should be the definite aim of the practitioner to avoid irritating the inflamed urethra, by using non-irritating substances and the weakest possible strengths consistent with therapeutic efficiency. He should bear in mind the tendency of the gonococcal infections to chronicity, especially the cases in which the posterior urethra and its adnexa have been attacked.

It is not to be expected that the practitioner will become expert with the urethroscope and its vast possibilities, notwithstanding the fact that many a problem will be solved by the use of this instrument, both as a diagnostic as well as a therapeutic agent. It *is* to be expected, however, that the practitioner will remember that there is such a thing as a urethroscope and that it should be called into requisition when he finds that his efforts are not meeting with the desired results in any given case. The practitioner should know what these instruments can do and in what circumstances they should be employed.

An interesting application of the urethroscope for diagnostic and therapeutic purposes, within the reach of the general practitioner, is found in cases of so-called impassable stricture. The simple urethroscopic tube is inserted as far as the obstruction, and under guidance of the eye a filiform is passed through the minute opening. In this manner what might have been a serious problem is readily solved; but the practitioner should prepare himself in

advance by the possession of this simple instrument and the acquisition of some experience in its manipulation, if he wishes to treat such cases with success.

In this connection, it is well to recall that a stricture of very large caliber is capable of producing most annoying symptoms. In many cases of "morning drop," with itching or neurotic pains and sensations in the urethral canal, it will be found, on examination with the Otis urethrometer, that there is a fine band or a slight infiltration area somewhere in the anterior urethra, with a caliber of twenty-nine or thirty French, or more. A course of dilations with the Kollmann dilator, going gradually as high as thirty-five French, and even higher, will cause these sensations to disappear coincident with the slight obstruction to the urinary flow.

At the same time one should not forget that the small meatus is a distinct factor in the production of obscure urethral complaints. The patient complains of sensations in his urethra of a vague and indescribable character. It is unwise and unfair to send him home with a reprimand and an order to "forget it." The patient cannot forget that something in his urethra is annoying him, and it is our business to find the cause of his annoyance and remove it. The small meatus must be regarded in the light of an actual stricture. The meatus cannot be dilated, but it can be enlarged, and if it is cut up to thirty-one or thirty-two French, thus allowing for recontraction to twenty-eight or twenty-nine, the patient will be grateful for the relief that has been afforded him.

It is not to be understood that every pain or sensation in the anterior urethra is due either to stricture or to a small meatus. Many of these indescribable sensations are reflex in character and have their origin in the prostate or seminal vesicles. However, whatever their origin may be, we should take them seriously and not laugh at them. The patient will find a quack somewhere who not only takes his aches and sensations seriously, but, at the same time, relieves him of a good deal of his material wealth. The quack never laughs at or derides the sexual neurotic, and that is one of the things we can learn from him to our advantage and profit.

The subject of chronic prostatitis and vesiculitis is so vast that it merely can be touched on at present. It is sufficient to say that while

our knowledge of these organs and their ailments has been increased tremendously during the past decade, we are still far from a complete understanding of their potentialities. Especially is this true of the seminal vesicles. They are infected in practically every case of gonorrhea in which the prostate is attacked, even though they show no direct evidence of such involvement. In gonorrheal arthritis the gonococcal focus is found beyond doubt in the seminal vesicles: and when we turn our attention to these little sacs by means of surgical measures, most striking results usually follow. In my personal experience, Belfield's operation of vasotomy, injecting an antiseptic solution into the seminal vesicles through the vas deferens, has produced results in arthritis of gonococcal origin, that cannot be surpassed by any other method of treatment. The practitioner will do well to remember that gonococcal arthritis does not respond to anti-rheumatic coal tar products and that the key to the situation consists in eliminating the pus focus. Belfield compared the seminal vesicles in the male with the Fallopian tubes in the female, and in describing their chronic inflammatory condition, aptly termed them "pus tubes in the male." Many cases of so-called "lumbago" owe their existence to a pus focus in the seminal vesicles.

The prostate and seminal vesicles lend themselves quite readily to examination by palpation by rectum, though the vesicles often are inaccessible to the examining finger. It is important to map out the boundaries of the prostate and vesicles, but in many chronic cases, these organs are so matted together by the inflammatory exudate, that it is difficult to make out anything definite. Not infrequently, there is nothing but a large mass, soft, boggy and tender, filling the lower bowel more or less completely. The slightest contact of the examining finger with such a prostate will sometimes precipitate a gush of prostatic secretion at the urinary meatus.

It is of interest to note, in this connection, that there is no apparent correlation between the extent and character of the involvement on the one hand, and the symptoms complained of by the patient, on the other. The posterior urethroscope has demonstrated this to be a fact, and it is of considerable importance, because a very slight posterior infection may produce many and varied disturbances which are out of all proportion to the extent and character of the visible urethral lesion.

The study of the pathology of the verumontanum and the adjacent tissues of the deep urethra constitutes one of the most interesting phases in urology. In chronic conditions, the verumontanum is found much enlarged, distorted, inflamed and congested, and the adjacent urethral mucosa shares in the inflammatory process. There are three classes of symptoms of which patients complain—urinary, sexual and sensory.

The urinary phenomena consist usually of a frequent desire to void, or of a painful, burning sensation during or after the act of voiding. This hyper-sensitiveness is apparent only by day, when the patient is awake; he usually sleeps through the night without being called upon to void, thus offering a most important diagnostic point as compared with the nocturnal frequency accompanying senile hypertrophy, tumor, stone, or tuberculosis. Moreover, when the urine is voided it may be found clear and sparkling or it may present shreds in greater or less number; and when tested with litmus paper, it will be found to be strongly acid. In this hyperacidity, we find the key to many of these problems. Hyperacid urine, coming in contact with a hyper-sensitive vesical neck, results in a condition of vesical irritability, which is most annoying to the patient and difficult of eradication. Alkalinization of the urine and relief of the congestion in the posterior urethra by appropriate local treatment will bring decided relief.

The sexual phenomena are varied in character, but the most frequently encountered are the cases characterized by more or less complete impotence, premature ejaculation or excessively frequent nocturnal emissions. It is not sufficient to give these men a sedative or aphrodisiac mixture. If there is a lesion in the deep urethra, it must be studied and approached with that due regard for cause and effect that the surgeon applies to any pathologic condition elsewhere in the body. These cases are slow in the matter of recovery, but if they are treated with skill and patience, more or less recovery of function is the eventual outcome.

Above all, the practitioner should be warned not to commit the serious moral offense of advising marriage as a cure for these sexual disturbances. This practice is a most common one; it is an easy way to rid oneself of a bothersome patient; but it is a serious wrong to sacrifice the marital happiness of an innocent

young woman on the altar of therapeutic ignorance. It has been my lot to see many of these unfortunate therapeutic marriages, but I have never seen one in which the hoped for result was attained. In every single instance, the sexual incompetency not only persisted, but actually seemed to grow worse, because of obvious reasons.

The third or sensory group of cases is characterized by pain, which may be felt in any part of the body. These pains are not to be ignored; they are really felt by the patient. It is our task to determine the cause of these vague and indefinite pains and apply suitable therapeutic measures to the deep urethra, and especially to the verumontanum. In many of these cases the seminal vesicles share in the inflammatory process, and require special attention.

The practitioner will do well to differentiate clearly in his mind between chronic prostatitis resulting from gonococcal or other forms of prostatic infection, on the one hand, and senile prostatic hypertrophy, on the other. While both conditions involve the same organ, there is no perceptible relationship between the inflammatory process observed in prostatitis and the non-inflammatory hyperplasia seen in hypertrophy. And, inasmuch as there is no indication for prostatectomy in chronic prostatitis, there is, by the same token, no indication for prostatic massage and deep instillations in chronic senile hypertrophy. Yet it is not uncommon to see this topsy turvy therapeutic arrangement actually put into effect in these conditions. It is obvious that the results, by any stretch of the imagination, cannot be satisfactory either to the patient or to his attendant.

In passing, it may not be amiss to offer a word of warning in connection with the acute retention of urine so frequently observed in senile hypertrophy. In attempting to insert a catheter into the bladder for the purpose of relieving the retention, obstruction is very frequently met with. A soft rubber catheter often will not enter the bladder. The practitioner is tempted to conclude that this failure to enter is the result of a stricture in the deep urethra and, succumbing to the temptation, he proceeds to pass filiforms or fine metal sounds. This is perhaps the worst thing that can be done for the patient. The filiforms do not pass the obstruction, as a rule, but they do tear up the mucous membrane and bring about a state

of trauma in addition to the original obstruction, that is capable of serious consequences to the unfortunate patient. There should be a well defined rule of practice in connection with these cases, to the effect that if a small, soft catheter will not enter the bladder, a larger calibered firm catheter should be used. It will be found that a fairly large silver or woven catheter will easily pass through the tortuous canal, whereas a fine rubber catheter or a still finer filiform became engaged and refused to pass into the bladder. Still another interesting point to remember in this connection is that every case of difficulty in starting the urinary stream, or "stammering" of the stream, is not caused by hypertrophy of the prostate or stricture. If the practitioner will remember that lesions involving the spinal cord usually affect the bladder and thus diminish its propulsive power, he will be in a fair way to eliminate some of his most trying problems: *tabes dorsalis* is the most frequent offender in this respect, and it is quite common to detect the existence of this spinal condition through one of its first symptoms—interference with the normal urinary function.

Lastly, a word or two as to the internal administration of remedies for the urologic tract. Perhaps the most commonly employed remedy used is hexamethylenamin, sold under the trade name of urotropin. In the first place, in order to be effective, urotropin should be given in fairly large doses, from sixty to eighty or ninety grains daily. It should be remembered that urotropin does not liberate formaldehyde in the kidney sufficiently to be of any therapeutic value unless the acid is urine; therefore, it is necessary to acidify an alkaline urine by the administration, with the urotropin, of sodium benzoate or acid sodium phosphate, in doses of thirty to forty grains daily, with little water.

Santal oil is another urologic drug with a long record of service, but it is extremely doubtful if it has any particular value. In acute gonococcal infection, I believe it is sometimes absolutely harmful; in chronic conditions it is probably inert. My personal preference in acute urethral infection is methylene blue which, in spite of the disadvantage of its staining and tell tale property, undoubtedly exerts a beneficent influence on the inflammatory process. I give it in one grain dose, combined with four grains of boric acid, with satisfactory results.

In closing these necessarily rambling re-

marks, I desire to emphasize the point that I have been trying to make, namely, that the general practitioner is the first to see the patient, and upon him rests the responsibility and the opportunity of determining the nature of the illness and the best means of its eradication. His urologic problems will be diminished both in number and in seriousness if he will give due thought to the many factors involved and to the measures that can be applied for their relief. He need not necessarily become expert in urologic technic, but he can perfect himself in some of the more common diagnostic and therapeutic steps; he should know the value of the cystoscope and the urethroscope, the radiograph and the urinary tests, and he should know when and in what circumstances these measures are indicated. Above all, he should approach the subject of gonorrhea and its complications with the feeling that it constitutes one of the most difficult and obstinate diseases known to medicine, and that, if he would attain success in this field, he must devote to his work his utmost skill, patience and conscientious endeavor.

792 *Lexington Avenue.*

AN OUTBREAK OF DIPHTHERIA AT THE UNIVERSITY AND CHARLOTTESVILLE, VA., DUE TO MILK INFECTION.*

By W. E. BRAY, M. D., University, Va.

This small outbreak of milk borne diphtheria, which occurred last summer at Charlottesville and the University of Virginia, is of special interest, because of the very complicated system of boarding and lodging at the University, with consequent possibilities for the easy spread of any infectious or contagious disease. To appreciate this, one must understand that the boarding and rooming houses are confined chiefly to one rather small area; that the students in one house in one section of this area often take their meals at other houses in widely separated sections, so that upon the appearance of a contagious disease, almost within an hour or two the entire community has been more or less intimately exposed; and that the large attendance at the

University, especially at the Summer School, adds the further element of overcrowding.

The outbreak is of interest also because of several unusual features: It occurred in July, 1916, while the season for the maximum prevalence of diphtheria is during the autumn; it occurred among adults, there being only one case in a child; and it was marked by the large number of temporary carriers. This might be expected because of the close contact of the students, as well as of the intensive bacteriological work which was done to control the outbreak.

The most unusual feature of the outbreak, however, is seen in the manner in which the milk became infected. The usual milk epidemic of diphtheria is caused by the infection of the milk at the farm or at the dairy or at the milk shop, where a clinical case of diphtheria, or a diphtheria carrier infects the milk which reaches the consumer without being pasteurized. In this instance, infection took place after pasteurization in bottles, and before the milk left the pasteurizing department of the dairy.

Prior to the outbreak, Charlottesville and the University had been singularly free from diphtheria. There were no residual cases, so to speak. During the year 1914, there was reported only one case of diphtheria in Charlottesville, this being in November; during 1915 there were only two cases, one in January and one in February; and in 1916, there were no cases reported for the three months immediately preceding the outbreak.

On July 7th, two cases of diphtheria occurred in adjacent boarding houses near the University, and one case at the University of Virginia Hospital, in a patient who was ready to be discharged. The following day, a new case developed in the City of Charlottesville, and two carriers were detected among those associated with the first two cases. By the 10th, or within three days, there were eleven cases. Such an explosive outbreak, among the Summer School students and the people of Charlottesville, demanded immediate measures for its control. Consequently, the matter was reported to the Commissioner of Health, Dr. Ennion G. Williams, who responded promptly and at once began an investigation of the outbreak from the standpoint of the epidemiology.

His investigation showed that all cases were in houses supplied by one dairy in Charlottesville, and that there were no other factors in

*Read at the annual session of the Virginia Public Health Association, at Lynchburg, April, 1917.

(Editor's Note.—On account of the interest manifested in milk-borne diphtheria at this season, we publish as a matter of record, this report of Dr. Bray's, which has just come into our possession).

common to all of the cases. Further investigation at this dairy showed that the wife of one of the workmen was complaining of a sore throat, but had not called in a physician. Culture from this throat showed Klebs-Loeffler bacilli. This workman was employed in placing caps on the milk bottles. The capping of the bottles was done by hand, and it was seen that in order to separate the caps one from another, the man would often moisten his thumb with saliva. The man himself appeared quite anemic, but culture from his throat was negative. The dairy where this occurred is one of two dairies supplying milk to the University and Charlottesville. These dairies are under inspection of, and regulation by, the city, and only pasteurized milk can be sold. Hence, it is seen that after all care taken in pasteurizing the milk, the entire safeguard was rendered ineffective by not having machinery for capping the bottles. The manner in which the milk became infected explains, perhaps, why there were not even more cases, because not every bottle was infected.

The outbreak was brought under control immediately by relieving this workman of duty and by having the bottles capped by hands in surgically clean gloves until machinery for capping could be installed. Only four cases were reported after this step was taken, one of which developed so soon that infection had probably already taken place. The other three cases were contact cases.

We were fortunate in having placed at our disposal for isolation purposes, the new wing of the University of Virginia Hospital, which had just been completed, and this accounts, perhaps, for the very limited spread by contact under the crowded conditions mentioned. Patients and carriers were isolated, and special nurses provided. Cultures were taken from all who were exposed to either the cases or the carriers, and two negative cultures on successive days were required for discharge. In all, 252 people were examined, and 587 cultures were made. The bacteriological work was done in the Clinical Laboratory of the University of Virginia Hospital, the State Health Department co-operating through its representative, Dr. Traynham.

In addition to the measures already mentioned, a public campaign was made among the students for the observance of personal precautions. Special precautions were put into operation at the soda fountains, requiring

sterilization of spoons and saucers and the serving of drinks from paper cups. And the boarding houses were required to disinfect all dishes. The swimming pool at the gymnasium was closed for ten days and disinfected.

The cases were all mild and the membrane appeared first on the tonsils in all cases. There were no deaths, and no paralyses.

Antitoxin was given early in clinical cases. No prophylactic doses of antitoxin were given. In all, there were reported fifteen clinical cases, eleven during the first three days, one on the sixth day, and three later on. These cases were in eleven houses. There were in all twenty-six temporary carriers; the average length of time that the bacilli remained in the throat was about seven days. One carrier had to be isolated for thirty days.

NITROGLYCERINE AND VERATRUM IN EARLY PNEUMONIA.*

By A. B. GRUBB, M. D., Cripple Creek, Va.

The older writers recommended blood letting in early pneumonia but, although this method aided by lowering tension in the blood vessels, yet its good effect was partly overcome by wasting the precious, more precious, most precious leucocytes at this important period.

Later came Hare who recommended veratrum for "bleeding the patient into his own vessels," or in other words he used it for its vaso-dilator effect. But veratrum is open to the objection that it is not a good vaso-dilator, that while it does actually lower blood pressure, it is mainly due to its action on the heart muscles and not so much the effect on the walls of the blood vessels. It is more of a circulatory depressant than a vaso-dilator, and it decreases the output of the heart per unit of time.

But nitroglycerine is a perfect vaso-dilator, by depressing the unstriated muscular fiber of the walls of the blood vessels, and it increases the output of the heart per unit of time by lowering resistance to the heart in the arterioles. However, as the effect of nitroglycerine passes away very rapidly I combine the two drugs, especially at night, so that the patient's sleep will not be disturbed so often.

When a patient takes pneumonia a few hours after the chill, he appears to be more or less shocked by the chill and would actually ap-

*Read by title before the Southwestern Virginia Medical Society at Marion, September 21, 1921.

pear to need immediate stimulation. But either with or without treatment, in at least twenty-four hours he reacts and the pulse feels full and bounding (even though the tension may not be increased), and the pulmonary sound is accentuated. It is in this early stage—say the first five days—that the happy results of treatment are noted and, from my point of view, there is no treatment of pneumonia except the early treatment.

Now the whole substance of this treatment is to lower blood pressure on the infected lung, just as a man with an infected finger will hold the finger up to his shoulder rather than allow it to hang by his side, thus lowering pressure in the finger and easing the pain.

A vicious circle is formed between the heart and affected lung. The harder the heart pounds against the lung, the greater the consolidation within the lung, and, the greater the consolidation, the harder the heart pounds until it becomes exhausted. The alveolars and the bronchioles act as drainage tubes to the lung just as well as a drainage tube acts in peritonitis. But, if the lung becomes consolidated, then these bronchioles become occluded with bloody exudates containing pneumo-toxin and their function as drains ceases, or at least is greatly hindered. So, by the lowering of the pressure within the lung, consolidation is prevented to a great degree and thus our drainage tubes stay open.

While the above is all theoretical stuff, in actual practice I have found the happiest results since following this plan. Delirium appears to have diminished at the rate of about 75 per cent., which may partly or wholly be due to the absence of quinine sulphate. The lung does not become so flat, breathing not so labored, the heart does not show the mechanical strain nor the toxemia, and the toxemia appears to decrease from the date of chill until day of crisis. The crisis usually comes from the seventh to the ninth day. The duration of the disease is not shortened.

I give the nitroglycerine every $\frac{1}{2}$ hour during the day and until 9 p. m. Then it is only given every two or three hours at night so that sleep will not be disturbed so often. The patient should be an individual as to dosage, but I have given 1/50 grain every $\frac{1}{2}$ hour. This from the average text-book point of view is a heroic dose. In lobar pneumonia it is discontinued about the sixth day, and in bronchial

pneumonia or the mixed pneumonia following "flu" it is discontinued when the cough gets loose.

Veratrum is given every three hours in six-drop doses during the first twenty-four hours and gradually diminished until the fourth or fifth day. Ammonia chloride is given and the bowels are kept freely open.

SUMMARY

By reducing the pulmonary pressure in the early stage of pneumonia, consolidation and toxemia are diminished and the heart is relieved of both a toxemia and a mechanical strain and the mortality is lowered.

PRIMARY LARYNGEAL DIPHTHERIA.

E. TRIBLE GATEWOOD, M. D., F. A. C. S., Richmond, Va.

A PLEA FOR BETTER TREATMENT, BASED UPON EARLIER AND MORE ACCURATE DIAGNOSIS.

INTUBATION; ITS INDICATIONS AND CONTRA-INDICATIONS. AVOIDANCE OF CHRONIC LARYNGEAL STENOSIS AS A SEQUELA.

Primary laryngeal diphtheria, as we more often see it today, may be looked upon from a surgical aspect rather than medical.

It is interesting to note the prevalence of diphtheria, which is one of the few conditions for which there is available accurate means of diagnosis, agencies for determining one's susceptibility, toxin-antitoxin mixtures for their subsequent immunization, and specific therapy for treatment.

Laryngeal diphtheria may be classified as secondary and primary; secondary infections usually follow the nasal or faucial type, and an early diagnosis is relatively easy.

My remarks will be only directed to the primary type which is so commonly overlooked until grave respiratory symptoms have developed and which is, therefore, fraught with such high mortality. With but few exceptions the cause of death from this infection can usually be charged to the ignorance of the parents or to the negligence of the doctor. An example of the former is well illustrated when one analyzes the statistics as reported by the large municipal contagious hospitals for intubated cases. As a rule, these patients are seen in a late stage for the first time by the family physician and are often moribund by the time they reach the hospital for treatment. The deaths that can be attributed to negli-

gence on the physician's part are the children in the incipient stage, giving rise to a slight change of voice, cough and probably a little rise of temperature. Usually, simple laryngitis or bronchitis is assigned as the cause, or the case may be looked upon with suspicion and a culture taken from the pharyngeal mucosa, only to be occasionally positive during the early stage in this type of infection. To recognize primary laryngeal diphtheria early, before obstructive symptoms are manifest and it becomes necessary to use intubating or tracheotomy tubes, we should make a thorough, direct inspection of the larynx, and, at the same time, obtain an uncontaminated culture from the interior of the larynx. To do this the child must be securely wrapped in a sheet, placed upon a table, in a darkened room, with the head held backward to an angle of ninety degrees, by an assistant. The distal illuminated laryngoscope, patterned after Jackson, is the best instrument for this purpose, and, if inserted gently along the median line until the epiglottis is caught up behind the spatula, no possible harm can be done and a great deal learned.

The vocal cords, interior of the larynx, and the first two or three rings of the trachea can be easily brought into view. The only difficulty to overcome is the laryngeal movements and mucus. The slight resistance that is offered by the patient is no contraindication for this important examination. The advantages of the examination are three-fold, i. e.,

1. As a differential diagnosis from papillomatous growths, foreign bodies, edema and ulcerative conditions, which invariably are attended with cough and hoarseness.

2. The fact of seeing membrane in the larynx should be conclusive enough for prompt administration of antitoxin instead of waiting for obstructive symptoms or a positive culture.

3. In order to obtain a positive culture in the incipient stage of this form of diphtheria, it is absolutely essential that the cultures be taken from the larynx and not the pharynx.

When we stop to consider that direct laryngoscopy is the only procedure by which a satisfactory view of the larynx can be obtained in infants and children, it is difficult to understand why it is not more generally used for early diagnostic purposes, thereby obviating the necessity of intubating and preventing

many deaths by early administration of antitoxin.

I clearly recall seeing in consultation, a very emaciated infant, six weeks old, manifesting signs of respiratory obstruction. From all clinical evidence, antitoxin and intubation seemed urgent, but a direct laryngoscopy was first decided upon. On inspecting the larynx, a chronic hypertrophic stenosis was recognized, and it was evident that a low tracheotomy was indicated rather than intubation. Tracheotomy was done under novocaine resulting in immediate relief. The culture and Wassermann were reported later to be negative. The patient succumbed to pneumonia two weeks later; histological examination revealed a syphilitic larynx.

As a routine, when children give symptoms such as hoarseness, cough and slight elevation of temperature, they should be regarded as diphtheria suspects, an immediate direct inspection of the larynx is called for. This examination should make it possible to differentiate such conditions as previously enumerated and at the same time obtain for culture uncontaminated laryngeal secretion. During this examination, if the examiner observes the presence of membrane, the patient should be immediately isolated and subjected to the usual treatment, until at least a definite report of the culture is made. If, upon this examination, no membrane is found and no definite cause can be assigned for the symptoms, we have no less accomplished an important feature in obtaining a culture directly from the interior of the affected organ.

INTUBATION.

Intubation may be direct or indirect, as the operator may elect. While the technic is looked upon as very difficult by some, there are others who consider it just as simple. There is no doubt that a certain amount of skill is essential, yet at the same time this is readily acquired by practice. It is needless to enter into a description of the direct or indirect methods of intubating, for they are well described in special text-books. The indirect method, as worked out by O'Dwyer years ago, is probably used by the majority of laryngologists, and entirely by the pediatricians. The disadvantage, as compared to the direct method, is the very fact of passing a tube into a delicate and diseased organ when we do not know the real existing condition, which is only

gained by direct inspection. We are as unjustifiable in passing a tube into the larynx by the palpatory method with a diagnosis based upon objective and subjective symptoms (excluding inspection of the larynx), as it is to pass a bronchoscope into the lungs in search of a foreign body without first obtaining a Roentgen-ray plate.

The indications for intubation, as put down in most text-books, are to lead one to wait until there is pronounced recession of the supra- and infra-sternal spaces with the accessory respiratory muscles brought into use.

I think we are prone to wait too late; our object should be to conserve all possible energy and, to do this, we should intubate when dyspnea is accompanied by restlessness and perspiration and not wait for stridor, retraction or suffocative attacks, as are set forth. A superfluous intubation, skillfully done, does no harm; if deferred too long, it may succeed in relieving the respiratory obstruction, but yet fail to save the patient.

CASES UNSUITABLE FOR INTUBATION.

1. Those complicated by edema of the larynx.

2. Those complicated by tracheal infection.

3. Those moribund from obstruction, which might be increased by temporary blockage.

4. Cases of subglottic catarrhal laryngitis. The latter condition may be difficult to recognize; at the same time I do not think we are justified in intubating unless we can see some evidence of membrane, or have previously obtained a positive culture. Cases of this nature, accompanied by urgent obstructive symptoms, should be tracheotomized rather than intubated.

AVOIDANCE OF POST-OPERATIVE STENOSIS.

Statistics show one per cent of all cases tubed for supposed laryngeal diphtheria are subsequently forced to wear an intubated or tracheotomy tube permanently. Post-diphtheritic stenosis may be caused by a replacement of cicatricial tissue secondary to a diphtheritic necrosis or by a newly formed inflammatory infiltrate. While this sequela is not wholly avoidable, I do think if a more careful study were made of the larynx by direct laryngoscopy to ascertain accurately as possible the type of pathology existing, we would avoid occasionally inserting a tube in the midst of a simple acutely inflamed organ and expecting the

reaction to subside in the presence of that foreign body without stricture following. The more accurately the tubes are fitted to the larynx, the less friction created with subsequent disaster. The earlier the tubes are inserted, the earlier they are likely to be dispensed with, thereby lessening muscular contractions with accompanying hypertrophy.

The treatment of chronic laryngeal stenosis depends upon the type and cause, and will not be discussed at this time. It is sufficient to say, however, that, excepting the simple hypertrophic type, the treatment is long drawn out and uncertain.

CONCLUSIONS.

1. If laryngeal diphtheria is diagnosed early, intubation is a rare necessity.

2. Direct laryngoscopy is the only way to obtain a satisfactory laryngeal culture from infants and children.

3. Direct laryngoscopy is the most important procedure we have in making a laryngeal diagnosis in children.

4. It is unscientific to intubate before first inspecting the larynx.

5. The earlier antitoxin is administered, the better the tubes are fitted; and the sooner the tubes are removed, the less likely stenosis is to follow.

Professional Building.

GLOBUS DIOSPYRI VIRGINIANAE SEMINUM—REPORT OF A CASE.*

By W. LOWNDES PEPLE, M. D., F. A. C. S., Richmond, Va.

Quirico Sotgia, as his name would imply, is an Italian. He came from the dispensary to my clinic at the Memorial Hospital, on January 20th, with a lump in his stomach and an inability to speak or comprehend the English language.

With much patience and labor we were enabled to elicit one definite fact, and one only. He had eaten of fruit and been made sick. So had Adam. So have we all, each and every one of us in all this wide world, provided he has lived long enough to be weaned. We have all eaten of fruit and been made sick; some one kind, some another; some once, some many, many times.

It interested me greatly, but did not help me, for it is the oldest of all stories—the story of

*Read before Spartanburg meeting of Tri-State Medical Association, February 16-18, 1921.

the Creation itself. "What kind of fruit, Quirico?" There was a shrug of the shoulders—a shake of the head. I had left the Garden of Eden only to find myself standing before the shut front door of the Tower of Babel.

He was a thin, sallow fellow and the lump was plainly evident, so we put him down as a probable case of pyloric ulcer or carcinoma and sent him on for X-ray examination.

The roentgenologist reported a rather unusual condition. There was no ulcer nor cancer, but there was a large mass which could be readily shifted from one end of the stomach to the other. It was transparent, of course, but made a large globule or filling defect in the barium meal. His opinion was that it was either a polyp on a very long pedicle or a foreign substance such as a hair-ball.

This was most interesting. If only we could get a history! I thought of my friend Bucceroni, who was with us in France. Would Louis assist a comrade in great need, and also aid a fellow countryman in dire distress? Surely he would—and all was easily arranged.

"He is a native of Sardinia," said Bucceroni, "but speaks Italian very well." To this I readily assented. He is fifty-two years old and a farmer by profession, but has worked as a laborer for the past eight years, since coming to this country. He has never before been seriously ill. There is no history of lues. He has not had constipation, indigestion, or dyspepsia. He has not vomited nor passed blood. There is no marked loss of weight.

"Has he ever worked in fabrics, threads, or yarns?" "No."

"Has he had to do with the shearing of sheep or the carding of wools?" "No."

"Perhaps in Sardinia, his home, he has made nets for the taking of little fish?" "No. He was a farmer and dug in the ground. Since the war began he has worked in an aviation camp as a laborer." He was a well man, working at Hopewell, Va., up to December 16th. On that morning he arose as usual, but took only a cup of coffee for breakfast. At dinner he ate very freely of fruit, making two meals at one time of this alone.

"What kind of fruit?" "He does not know. He thought at the time that it was very good, but now—no!"

"Where did he get the fruit?" "Off of the tree. He saw others eating it, and made two meals of it himself at one time."

Here was light at last! What tree in Vir-

ginia bears ripe fruit in mid-December? But one—the *Diospyrus Virginianae*. Evidently this tree that is the crowning glory of Fluvanna County, does not flourish along the banks of the Piave. It is unknown in the home of the Garibaldi. Its luscious fruit, the delight of all natives of my State, including canines, marsupials, and Afro-Americans, is the despair of the dwellers in Istria. It is our meat. It is their poison.

"Did he eat the seeds?" "He ate everything." "Did he spit out the seeds?" "No. He ate all. He spit out nothing."

"Did he pass the seeds?" He thinks not, but does not know."

"Did he vomit the seeds?" "No, but each day, not missing one in five weeks, he has put down his throat the finger and tried to vomit. But nothing comes; only a little pinkish water that tastes and smells always of the fruit, and it is very, very bad."

On January 25th he was taken to my clinic and his case was thoroughly gone into with the students, taking up the history, laboratory and physical findings. We then made a summary, about as follows:

Here is a man with a lump in his stomach. He has none of the symptoms of ulcer or cancer, except the mass. His blood picture shows nothing abnormal. His chief complaint is gastric distress and nausea, which makes him unable to work. He wants to empty his stomach but cannot. His trouble is definitely associated



Fig. 1. Showing the mass as a filling defect, well over in the cardiac end of the stomach.

with the eating of fruit on December 16th. On that day he was well. Since then he has been

sick. He was quite ill for several days and was under the care of a physician, who gave him purgatives. This helped him, but did not cure him.

Here is the mass in the epigastrium. We can shift it from under the ribs on the left side over to the median line. The roentgenologist tells us it is either a polyp on a long pedicle or a foreign mass. He says there is a large mass which displaces his barium, and that under the fluoroscope he can shift it from one end of the stomach to the other. There is one important negative fact which he did not record. If the mass was really a polyp there should have been a dimpling of the stomach wall where the pedicle was attached, when the mass was pushed to the end of its tether. No such dimpling was noted. The history of its abrupt onset is not the history of such a growth. I think we may exclude it.

We then have by exclusion a foreign body. What is its nature?

We have the definite history of this man having eaten freely of the fruit of the *Diospyrus Virginianae* on December 16th, just forty days ago. It is definitely known that he swallowed the fruit seeds and all. He did not spit them out or vomit them up. He can not say that he has passed them. The seeds of this fruit are large and flat. They are covered or surrounded by a gluey-like mass of pulp which

which he ate forty days ago. He has eaten none since, and doubtless never will again. I think our diagnosis can be made: *Globus Diospyri Virginianae Seminum*.

The next question is: What is the safest method of obtaining relief?

I have advised with several colleagues, and all advise gastrotomy. If on opening the abdomen we find the mass is easily broken up, we may decide to crush it and pass it down through the pylorus. This would have the disadvantage of possibly causing an obstruction further down, but the advantage of leaving the stomach unopened.

We make the right rectus incision as for gastric operations—and here is the mass. You see the stomach is not adherent, nor are its walls congested. The mass is larger than I had thought. It is irregular in outline. It is very hard to the touch. I think I would do much harm to the gastric mucosa if I tried to crush it. I slip it over to the least vascular area, here to the left of the median line, and incise the stomach from above downward in the line of its vessels. I deliver the mass.



Fig. 2. Showing the mass pushed over toward the pyloric end of the stomach, near the lesser curvature.

might readily make them mass or mould into a ball. When he vomits now he tastes the fruit

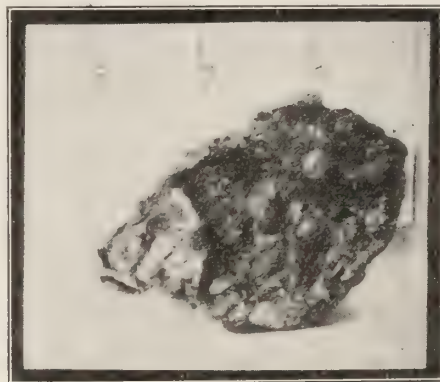


Fig. 3. The mass after removal, showing its size and composition.

Our diagnosis is verified—you can see the seeds sticking out of it like peanuts in peanut candy.

The stomach contains some fluid and bile but there is no evidence of erosion on the surface that is visible. The incision is closed with chromic gut, with a few sutures of linen for safety. The abdominal wound is closed in the usual way and the operation is completed.

The specimen when passed around was of a greenish yellow hue, with a strong odor of the fermenting fruit. It was about three and a half by three inches. It is very irregular in outline and compact in structure. The seeds seem firmly embedded in a dense fibrous mass.

It was later dried out and shrunken, and lost much of its size and weight.

The patient had no unfavorable symptoms and made an uneventful recovery.

THE TREATMENT OF BLEPHARITIS ULCEROSA WITH MERCUROCHROME.

By WILLIAM PATTERSON, M. D., Danville, Va.

Fuchs says, "Blepharitis is distinguished by its eminently chronic course, which often extends over a series of years. A permanent cure is obtained in only a few cases."

Every one who has treated this disease has found the above to be true. Blepharitis ulcerosa is a very common, as well as a stubborn disease. For this reason, we are all interested in a treatment that has done good in some cases of long standing.

For a permanent cure, treatment should be both general and local. Scrupulous cleanliness and general supporting remedies are the first requisites in the treatment. Causal conditions, such as dacryostenosis and conjunctival catarrh, are removed. In all cases, an essential part of the treatment is the thorough correction of any existing refractive error. Any general disorder, such as constipation, anaemia or tuberculosis is relieved, if possible.

The following local treatment, and this is the part I wish to emphasize, has proven very satisfactory; and when combined with the proper general treatment, a permanent cure is almost always obtained. This consists of softening the scabs with white precipitate ointment and then removing them with hot boric acid compresses. The small abscesses are opened and cleaned out. The cilia are epilated at the first treatment. After the lid margins have been thoroughly cleansed and dried, a five per cent solution of mercurochrome is painted along them, being careful to get the medicine on the lid margins only, as its bright red color is objectionable on the face and hard to remove. This treatment is given once a day, preferably at bed time. It is remarkable to see the results obtained after a few applications of this treatment, in cases of long standing, that have withstood all other treatment.

Mercurochrome, a combination of fluorescein and mercury, is one of the more recent preparations. Unlike iodine and silver, that have been extensively used in the treatment of

blepharitis, it has powerful germicidal and penetrating properties, without, however, irritating the tissues. It is highly thought of by Dr. Lancaster, who advises its use before operation and also in acute infections of the ocular and palpebral conjunctiva, but I have never seen it recommended in the treatment of blepharitis.

Miller Building.

Correspondence

Re Medical College Merger.

Norfolk, Virginia,

January 3, 1922.

To DR. A. G. BROWN, Editor:—

I thank you very much for your permission to publish Dr. Gray's letter in the Monthly.

A few words of explanation are necessary to make the matter plain to the members of the Society to whom the Monthly goes.

Dr. Gray was the presiding officer at the Lynchburg meeting, when Dr. McGuire's resolution, favoring Richmond as the site of the proposed combined school, was presented. There was only a brief discussion of the resolution before two "substitutes" were offered, and the discussion of these substitutes was also very limited. When both of them had been disposed of by adverse votes, the question before the house was the original resolution of Dr. McGuire's. At least a dozen friends of the University of Virginia were anxious to discuss the matter, and had reason to feel that their remarks might have a decided influence on the final vote. *To their utter astonishment they were refused the right to speak*, the Chair ruling that disposal of the substitutes rendered discussion of the original motion "out of order".

Such a decision was unique and "unheard-of" in parliamentary usage, and contrary to "Roberts' Rules of Order", under which the proceedings were supposed to be conducted.

Immediately after the adjournment I conferred with one of Dr. Gray's close friends, Dr. Stephenson, a former member of the Virginia Legislature, who agreed with me that Dr. Gray was in error. I at once repeated this to Dr. Gray and urged that he inform himself and, in justice to the Society, if he found that he was mistaken, report the matter to the So-

ciety before final adjournment the next afternoon.

The attached letter was sent to me later by Dr. Gray, and will explain itself.

(Signed) SOUTHGATE LELGH.

DR. GRAY'S LETTER.

Richmond, Virginia,
October 25, 1921.

To DR. SOUTHGATE LEIGH:—

In my continued effort to be absolutely fair and impartial in my ruling, I attempted in Lynchburg to secure a copy of Roberts' Rules of Order to determine whether or not I was correct in not allowing further debate after the vote on the ratification of the resolution of the House of Delegates had been called. Since my return I have purchased a copy of Roberts' Rules of Order Revised, and find under Section 7, "Debate must be limited to the merits of the immediately pending question, that is, the last question stated by the chair that is still pending; except that in a few cases the main question is also open to debate." Reference is made to Section 45, under which I find in the list of "Motions that Open the Main Questions to Debate" the word "Ratify".

I was, therefore, correct in my opinion that the resolution adopted by the House of Delegates was still under discussion. You will recall that several advocates of Charlottesville, including Dr. Jones, discussed the resolution adopted by the House of Delegates. The substitute offered by Dr. Jones, if passed, would have immediately settled the main question. Ample opportunity for debate was allowed on it, and the question called without objection. The vote was then ordered. I thought the debate on the whole subject was closed when the question was called on Dr. Jones' substitute.

The best interpretation I can make inclines me to believe that technically I was in error in not allowing a continuation of the discussion of the "Main Question", which was the motion of Dr. McGuire to ratify the resolution of the House; but when you appealed from my decision and the Society sustained my ruling, the vote by which the resolution was passed was entirely proper.

Never having posed as a parliamentarian and not having seen for many years a copy of Roberts' Rules of Order, I wish to thank you for appealing from my decision so that the wishes of the body could be obtained. I feel that if I have made an error, it has worked no

hardship on anyone; but, if such has been done, it more seriously affects the advocates of Richmond than those of Charlottesville, since you will recall that no Richmond advocate was permitted to discuss the question at all, which fact has been brought to my attention by several who intended to discuss it.

I trust and believe that the calibre of the doctors in this State is not sufficiently small to allow a difference of opinion as to what is best in the location of our State Medical School to cause any personal ill feeling or in any way damage our Society, but that the next meeting in your city will be the most interesting and instructive in its history.

(Signed) A. L. GRAY.

Norfolk Makes Prior Claim For Tuberculin Test on Cows.

December 21, 1921.

TO THE EDITOR:

I read an article in the December number of the VIRGINIA MEDICAL MONTHLY, written by Dr. S. H. Rosenthal, of Lynchburg, entitled "Public Health Work in Lynchburg," in which he states that "In April, 1913, the city adopted an ordinance requiring all milk sold or delivered in the city to be pasteurized or drawn from tuberculin tested cows. The result was that Lynchburg was the first city in America whose people enjoyed immunity in possessing milk immune from bovine tuberculosis." Dr. Rosenthal is in error when he states that Lynchburg was the first city in America having an ordinance requiring tuberculin test for dairy herds. I am quoting, verbatim, a copy of a city ordinance passed by the Councils of Norfolk on March 12, 1901, Sec. 349:

"Any owner of cows selling milk within the city of Norfolk shall have such cows tested for tuberculosis by a reliable veterinary between September 1st and December 1st, of each year, and shall file with said inspector within said time a certificate of said veterinary as to the condition of the cows, and should any of said cows have tuberculosis no milk shall be sold by such owner within the city of Norfolk while in possession of such tubercular cow."

So far as my information goes, I believe that the city of Norfolk was the first city not only in Virginia, but in the United States, to require all herds, from which milk was drawn to be sold in Norfolk, to be tuberculin tested.

This ordinance has been actively in operation and strictly enforced for more than twenty years.

POWHATAN S. SCHENCK, M. D.,
Director Public Welfare and Health
Commissioner, Norfolk, Va.

A New Year Message To All Ex-service Men.

Norfolk, Virginia,
 January 1st, 1922.

I want every ex-service man in Virginia to become a member of the American Legion during the coming year.

This organization is for you. It is not military, and rank is not recognized. It stands for all that is best in American life. It is non-sectarian and non-political. It does not discriminate against any race, sect or creed. It is *for God and country*. It is *American* to the core. Any person who has served his country in her hour of need and who has an honorable discharge is eligible for membership. It is organized "to consecrate and sanctify our comradeship by our devotion to mutual helpfulness."

I consider it a great privilege to be a member of the American Legion and to be able to participate in the splendid work it is doing for those of our comrades who are physically and financially disabled. *Why can you not come in and lend a helping hand?*

If you do not approve of the policy of the Legion get in and change it. *It is your organization*. You who remain on the *outside* and criticise can accomplish nothing; on the *inside* you can do so much good. *Come in*.

A Happy New Year To You All.

Yours for Service

JUNIUS F. LYNCH,
 Department Commander.

Proceedings of Societies

The Norfolk County Medical Society.

The Eye, Ear, Nose and Throat Section of the Norfolk County Medical Society met Thursday evening, December 1st, 1921, Dr. J. Warren White in the chair.

Subject Symposium: Infection of the Accessory Nasal Sinuses.

Etiology, Pathology and Diagnosis: Dr. Frank P. Smart.

Systemic Diseases and Ophthalmic Lesions

Resulting from these Infections, Dr. H. L. Myers.

Surgical Treatment, Dr. Herbert R. Etheridge.

DR. J. E. DIEHL: I have enjoyed these papers very much. I have been a victim to chronic sinusitis for the past fifteen years and am still suffering from some of the operations that were performed in my nose. In acute sinusitis I think many of them can be cured by using suction and irrigation and establishing drainage. In chronic sinusitis I don't know whether we get much good from radical operations. It is a question to me whether we ever cure a case of chronic sinusitis. When we operate I believe the external operation is the best, for we have the field in view and are not working in the dark.

DR. B. R. KENNON: First, I wish to thank each one of the gentlemen for these papers and the way in which they presented them. We are fortunate to have heard the papers as we all know this is one of the biggest subjects in our surgery. It is responsible for as much work and annoyance as all the rest of our work together. I don't believe there is a man in this room but hates to see a case of chronic ethmoiditis or sinusitis come into his office. I can do as clean an ethmoid as any one but do not always get as good results as I would like.

In the last year I have had four cases of frontal sinusitis in which I did a radical operation. Two are well and two are still draining and I can't tell the outcome. I recall two cases of ethmoiditis with retro-bulbar neuritis, with practically no vision. One with polyps was cured with operation and one without polyps was cured with suction.

DR. A. A. BURKE: Dr. Myer's statement as to how the sinus infections caused so much systemic trouble reminds me of a case that came into my office the other day with asthma and, in making my examination, I found that she had an infected antrum. After operation for the antrum trouble there has been no return of the asthma. Sometime ago I read an article in a leading medical journal, entitled "Death Caused from Opening the Antrum" and, for a while, I was almost afraid to open an antrum, but I have come to the conclusion that it was from the cocaine and not the operation. I have operated on over two hundred without any trouble. I think the reason we so often fail to get good results in ethmoid operations is because they spread over such a large area

we never knew when we have removed them all.

DR. J. W. WHITE: I would like to say that I have enjoyed these three papers. Dr. Smart brought out a good point in his paper about proper ventilation of the sinuses. I think that most important. Dr. Myers in speaking of retro-bulbar neuritis recalls a case I had some time back. A man came to see me with one eye red and the vision in that eye 5/200 and I found that he had antrum infection. Ten days after the antrum was opened up the vision was 20/20. Another case was a lady who was suffering with bronchitis. I thought probably it might be tuberculous and in having her chest and teeth x-rayed we accidentally found an infected antrum; after this was drained the bronchitis cleared up. In Dr. Etheridge's paper on treatment, I think proper ventilation should be done before doing any radical operation. In operating for frontal sinusitis I prefer the nasal route for, if you have infection you will have a sinus. I have seen several cases do this. I understood Dr. Etheridge to say if inspection and x-ray were negative he would advise an exploratory operation in ethmoiditis. I would like to take issue with him. I think we should do as little as possible and wait and watch.

DR. F. P. SMART: Do as little as possible to the ethmoids and in many cases it is best to remove the middle turbinate, and in doing this the Sluder method is the best I have tried. I know of one case in which we had to do something for the pain and I was afraid to do a submucous first on account of his nose being full of pus. I worked the Sluder knife up to the cribriform plate and removed the middle turbinate, also opening up the ethmoids, and gave good drainage, and the infection cleared up.

DR. H. R. ETHERIDGE: In answer to Dr. White; the point I meant to bring out was that in hyperplastic sphenoiditis there is nothing you can see and the x-ray will show nothing; the patient has severe headaches and these are aggravated by cold. You have nothing but subjective symptoms. Often when you open up the ethmoids you will find diseased cells and probably polyps. That is what I meant when I said operate.

A. D. MORGAN, *Reporter*.

The Seaboard Medical Association of Virginia and North Carolina

Held its twenty-sixth annual meeting at

Norfolk, December 6-8, 1921, under the presidency of Dr. E. C. S. Taliaferro, of that city. The scientific program included a large number of interesting papers and the social features, which included a smoker, a reception by the president, and an oyster roast at Cape Henry, added much to the enjoyment of those in attendance. Newbern, N. C., was selected as the place of the next meeting, which is to convene on the second Tuesday in December 1922. The following officers were elected: President, Dr. Jos. L. Spruill, Sanatorium, N. C.; vice-presidents, Drs. Jos. T. Buxton, Newport News, Va., W. E. Warren, Williamston, N. C., Cora Z. Corpening, Suffolk, Va., and Franklin P. Gates, Manteo, N. C.; treasurer, Dr. Geo. A. Caton (re-elected), Newbern, N. C., and secretary, Dr. Clarence Porter Jones (re-elected), Newport News, Va.

Southside Virginia Medical Association.

The seventy-second quarterly session of this Association was held in Petersburg, December 20, with about fifty members present. Dr. E. L. Kendig, the president, was in the chair. An unusually good program was rendered at the afternoon session and a public meeting on cancer was given at night. This last meeting was presided over by Mr. W. E. Harris, editor of the *Index-Appeal*, and was addressed by Drs. J. S. Horsley and R. C. Bryan, of Richmond.

The following officers were elected for 1922: President, Dr. T. M. Raines, Wakefield; vice-presidents, Drs. W. C. Harman, Dolphin, W. C. Powell, Petersburg, W. T. Gay, Suffolk, and E. F. Reese, Courtland; secretary-treasurer, Dr. R. L. Raiford, Sedley. The next meeting, on the second Tuesday in March, will be held in Suffolk, Va.

R. L. RAIFORD, *Secretary*.

The Augusta County Medical Association

Held its regular meeting in Staunton, December 7, with an attendance of about 25 members. Several interesting case reports were given and papers were read by Drs. C. P. Obenschain, H. G. Middlekauff, D. T. Gochbauer and H. F. White. It was decided to hold meetings quarterly instead of bi-monthly. Dr. W. S. Whitmore and Dr. J. F. Fulton, both of Staunton, are president and secretary, respectively.

The Dinwiddie County Medical Society,

At its annual meeting the middle of December, elected Dr. R. A. Martin, Petersburg.

president; Dr. E. W. Perkins, Petersburg, R. D., vice-president; and Dr. W. C. Powell, Petersburg, secretary-treasurer. Drs. C. S. Dodd, C. M. McCuiston and Geo. Reese were elected members of the board; Drs. E. L. McGill and J. F. Ragland delegates to the State Society; and Drs. C. T. Jones, D. C. Mayes, and L. S. Early members of a committee on public health and legislation.

The Warren-Rappahannock-Page County Medical Society

Held its regular meeting at Luray, November 9, 1921, at which time a symposium was presented on Acute and Chronic Parenchymatous, and Chronic Interstitial Nephritis. Papers were read by Drs. Giles B. Cook, E. L. Grubbs, R. P. Cooke, D. M. Kipps, and L. F. Hansbrough, of Front Royal, Geo. H. Long and Virgil Hammer, of Luray, E. R. Browning and L. C. Haynes, of Flint Hill, and P. G. Hundley, of Shenandoah. The discussion was opened by Dr. E. W. Brown, of Washington, Va. The next meeting will be held in Front Royal, April 22, 1922.

The Southampton County Medical Society

Held its regular monthly meeting in Courtland, December 6th. After the scientific end of the program was disposed of, the annual election of officers was held and the following were elected: President, Dr. B. A. Pope, Newsoms; vice-presidents, Drs. E. F. Reese, Courtland, H. H. Foster, Branchville; and secretary-treasurer, Dr. R. L. Raiford (re-elected), Sedley.

The men present determined to put forth an especial effort to make 1922 the banner year of the Association. It was decided to hold the January meeting in Franklin, and a good program and full attendance are expected.

R. L. RAIFORD, *Secretary*.

The Warwick County Medical Society,

At its annual meeting, elected the following officers: President, Dr. D. W. Draper; vice-president, Dr. W. S. Snead; secretary-treasurer, Dr. H. E. Knox. All are of Newport News.

Richmond Academy of Medicine and Surgery.

At its annual meeting on December 13, Dr. Arthur C. Christie, of Washington, D. C., read a paper on "Ulcer of the Stomach". Following this, the election of officers was held and the following men were chosen to preside over the Academy in 1922: President, Dr.

James K. Hall; vice-presidents, Drs. R. D. Garcin, W. H. Craig, and J. R. Blair, secretary, Dr. M. W. Peyser; assistant secretary, Dr. E. H. Terrell; treasurer, Dr. Howard Urbach; librarian, Dr. G. P. LaRoque. A Judiciary Committee, composed of the following members, was appointed: Drs. Thos. D. Jones, A. L. Gray, McGuire Newton, Virginius Harrison, Greer Baughman, W. H. Higgins, and W. L. Peple.

The Medical Society of the District of Columbia,

At its annual meeting, held recently, elected Dr. Archie W. Boswell, president; Drs. Wm. H. Hough and Prentiss Willson, vice-presidents; Dr. J. Russell Verbrycke, corresponding secretary; Dr. C. B. Conklin, recording secretary; and Dr. Edw. G. Seibert, treasurer.

Southern Medical Association.

At the fifteenth annual meeting of the Association at Hot Springs, Ark., Dr. Seale Harris, Birmingham, Ala., was elected president, and Dr. M. Y. Dabney, Birmingham, Ala., secretary-editor. The next meeting is to be held in Chattanooga, Tenn. Dr. Kenneth M. Lynch, Charleston, S. C., was awarded a gold medal for his laboratory work and accomplishments in the study of tropical medicine.

Southern Surgical Association.

The annual meeting of this association was held at Pinehurst, N. C., December 13-15, under the presidency of Dr. Randolph Winslow, of Baltimore. There was a good attendance and the papers were of a high degree of excellence. Dr. C. Jeff. Miller, of New Orleans, was elected president and Dr. H. A. Royster, Raleigh, N. C., was re-elected secretary. The next meeting is to be held at Memphis, Tenn., in December 1922.

Drs. R. L. Payne, of Norfolk, and R. C. Bryan, of Richmond, carried off the honors in the golf tournament which was open to all members.

Secretary's Announcement

Medical Practice Act Endangered.

The chiropractors plan the establishment of their own examining board in this State at the next session of the State Legislature. This board will establish its own standards as to preliminary training as well as to technical training—God save the mark. They plan also

the establishment of their own training school with the legal right to confer the honored title of "Doctor" on their graduates. If their plans succeed, they will get the privilege of placing their patients in any and all hospitals maintained in whole or part by public funds; the right to sign birth and death certificates; the privilege of establishing their own hospitals and clinics; in fact, they obtain, with the success of this pernicious legislation, every right and privilege now enjoyed by men who have earned by honest effort and high standards of training and character the right to minister to human ills. What they actually obtain is a wider opportunity to prostitute the title of "Doctor" to the lowest mercenary levels; a legally fortified vantage point from which to undermine as far as possible the work of the State Board of Health and your local health authorities; an opportunity to fasten on each community in the State an aggressive focus of ignorance and disease, more injurious than that disgusting nonsense—Christian Science. A statement of the case of chiropractic, obtained from their own literature, and, therefore, in a sense, reliable, will be mailed within the next few days to the members of the medical profession, officers of the Virginia Tuberculosis Association, Red Cross, and other organizations interested in the prevention of disease.

It is difficult enough to do educational health work in any community without having aggressive sources of ignorance to contend with; it will be more difficult if these persons with the purloined title of "Doctor" are working against you.

G. H. WINFREY, *Secretary.*

The Truth About Medicine

During October the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Davis and Geck:
 Kalmerid Germicidal Tablets.
 Potassium-Mercuric-Iodide.
 Eastman Kodak Company;
 Eastman Barium Sulphate for Roentgenology.
 Powers-Weightman-Rosengarten Co.;
 Copper Citrate—P. W. R.
 Mercury Benzoate—P. W. R.
 Mercury Cyanide—P. W. R.
 Mercury Succinimide—P. W. R.
 Silver Citrate—P. W. R.
 Silver Lactate—P. W. R.

Solution Arsphenamine-Lowy: This product has been acquired by E. R. Squibb and Sons, and is retained in New and Nonofficial Remedies as Solution Arsphenamine-Squibb.

During November, the following articles have been accepted by the Council on Pharmacy and Chemistry, for inclusion in New and Non-official Remedies:

G. W. Carnrick Co.:
 Amylzyme Capsules.
 Merck and Co.:
 Bromipin 10 per cent.
 Iodipin 10 per cent. Tablets.
 Powers-Weightman-Rosengarten Co.:
 Theobromine—P. W. R.
 Schering and Glatz:
 Xeroform S. and G.
 E. R. Squibb and Sons:
 Diphtheria Immunity Test (Schiick Test)—Squibb.
 Diphtheria Toxin—Antitoxin Mixture—Squibb.

Analyses, Selections, Etc.

Radium.

Radium was discovered in 1898 by Madame Curie. It is extracted from a number of radioactive ores, and there are now in existence about three ounces. The radium used therapeutically is not the element itself, but one of its bulkier salts or a gaseous emanation. There are three kinds of radium rays, but the Gamma, having a selective action upon the diseased cells, is the most important in medical work.

Plaques, tubes and needles are used to convey the element to the point of application. The application is painless, and is usually followed by a reaction, sometimes severe and very painful. Much skill and judgment on the part of the operator are necessary to make this reaction as mild as possible.

1. C. J. Broeman, of Cincinnati, in a paper on this subject calls attention to the fact that the popular impression that radium treatments are very expensive is far from the truth. The patient saves considerable time and money, because no extended sojourn to the hospital is necessary. There is very little interruption to his or her regular duties. Treatments are painless and there is no period of convalescence.

2. Radium is the ideal treatment for all forms of basal-celled epithelioma and for prickly-celled epithelioma, if seen early enough and no glandular involvement is present.

3. In carcinoma of the lip it is the treatment of choice when the case is seen early.

4. Radium is to be preferred in certain uncomplicated cases of uterine fibroid and bleeding.

5. Radium should be universally used in

cancer of the cervix and inoperable cancer of the body of the uterus.

6. In all forms of inoperable cancer it relieves pain and hemorrhage and lessens discharge.

7. Radium is to be preferred to the x-ray in cases of goiter because of its exact dosage, deeper penetration and ease of application.

8. It is the preferred treatment in tuberculous adenitis and vernal or spring catarrh while in certain systemic diseases, such as a splenomedullary leukemia, pernicious anemia, and Hodgkin's disease, radium therapy has proved beneficial.

8. In dermatology radium improves and eradicates many heretofore stubborn and incurable dermatological conditions, among which may be mentioned angioma, lymphangioma, keloids, lupus erythematosus and vulgaris, chronic eczema of the mucous membrane of the lips, warts, syccosis vulgaris, intractable pruritus, localized eczema, leucoplakia, extensive hypertrichosis and other skin affections.

10. From my own experience I feel justified in affirming that radium is here to stay and that the physician who is not willing to recognize its value to medical science is simply refusing to read the handwriting upon the wall.—(*Ky. State Med. Jour.*, June 1921).

Book Announcements

Nostrums and Quackery. Articles on the Nostrum Evil, Quackery and Allied Matters Affecting the Public Health, reprinted with or without modifications, from *The Journal of the American Medical Association*. Volume II. Illustrated. 332 pages. Published by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Cloth. 8vo. Price, \$2.00.

The first volume of this book was published ten years ago and a second and enlarged edition a year later. Since then, weekly articles on the nostrum evil, etc., have been published in *The Journal of the A. M. A.* This material has been collected and put in the present volume. In the Preface, it is emphasized that the work which this volume represents is wholly educational in character—not punitive. The material has been prepared in no spirit of malice and only to lay before the public certain facts "the knowledge of which is essential to a proper conception of community health." It is intended as a book of reference, though much of the matter makes interesting reading.

The Life of Jacob Henle. By VICTOR ROBINSON, M. D., Formerly Editor of *Medical Review of Reviews*; Editor of "Medical Life." 1921. Medical Life Company. 12 Mount Morris Park, West, New York. 8vo. 117 pages. Price, \$3 postpaid.

The first biography of Jacob Henle (1809-1885) in the English language has been most attractively portrayed by Dr. Robinson. Many of his inimitable letters are incorporated in this volume, giving a more intimate insight into the life of one of the "makers of modern medicine." The edition is limited to 500 copies, only 400 of which will be offered for sale.

A Form of Record for Hospital Social Work, Including Suggestions on Organization. By GERTRUDE L. FARMER, Director, Department of Social Work, of Boston City Hospital, Boston, Mass. Philadelphia, London and Montreal. J. B. Lippincott Company. 1921. 81. pages. Cloth.

Clinic in Shenandoah County.

The latter part of December, the Shenandoah County Chapter of the American Red Cross, in co-operation with the County School Board, held a two-day clinic at Woodstock, Va., at which time fifty-two children were operated upon for adenoids and diseased tonsils. Dr. Philip Boyd, of Winchester, was the operating surgeon, and he was assisted by a large number of the Shenandoah County physicians and a number of nurses.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examinations for bacteriologist, associate bacteriologist, assistant bacteriologist, junior bacteriologist; for roentgenologist, associate roentgenologist, assistant roentgenologist, junior roentgenologist; and for surgeon's assistant in dental, eye, ear, nose and throat work. Applications will be rated as received until March 31, 1922.

There is also urgent need for reconstruction assistants and aides in physiotherapy and occupational therapy, trained nurses, and physicians, to serve in hospitals and other establishments of the U. S. Public Health Service and the Veterans' Bureau, in the care and rehabilitation of men injured in the World War. Applications will be received by the Commission for these positions until further notice. Applicants will not be given written scholastic tests, but will be rated upon their education, training, experience, and physical ability.

Detailed information will be given by the Commission on request.

Virginia Medical Monthly

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Editorial

Resolution by Medical Society of Virginia Endorsing the Majority Report of the Commission on Medical Education in Virginia.

Whereas, The Commission on Medical Education in Virginia, appointed by the Governor to study medical education in Virginia and make a report to the legislature, has recommended that there be one state supported school in Virginia, and

Whereas, The Commission has recommended that the departments of medicine, dentistry, and pharmacy be conducted by said medical school as a part of the University of Virginia, and

Whereas, The Commission has recommended that said school be conducted in Richmond, and

Whereas, The State Dental Association unanimously, and the State Pharmaceutical Association unanimously, with two exceptions, have endorsed this report, and

Whereas, The medical profession of the State has, by an overwhelming majority, indicated its appreciation of the urgent necessity for adopting this report, therefore be it

Resolved, 1. That the Medical Society of Virginia, in its annual session at Lynchburg, endorses this report and urges the State legislature and the Governor to enact the necessary laws to put it into effect at the earliest possible date, and be it

Resolved 2. That the editor and publication committee of the Virginia Medical Monthly be instructed to use its columns in support of the Commission's report.

proper influence upon the members of the General Assembly to support and to enact into law the measures recommended by the Medical Commission, looking to the establishment of a modern state supported medical school. This is, indeed, a medical matter of extreme importance. Let every doctor exert his influence in behalf of this needed legislation.

A Reproach.

There is no division of opinion on the medical school question except as to the location. The profession in Virginia, through its State organization, stands for one state supported modern medical school, adequate for the present day needs and future progress, whether it be located at Richmond or Charlottesville.

A majority of medical men of the State believe that the best school can be developed at Richmond as a department of the University of Virginia, under the control of its Board of Visitors and its president.

The present situation is certainly a reproach and a reflection upon the intelligence of any progressive people. The President of the Carnegie Foundation states the proposition in the following terms:

"1. At the present time the State of Virginia is subsidizing two medical schools, one in Charlottesville, the other, the Medical College of Virginia, in Richmond. This situation is a reproach to the medical intelligence of the State and an injustice to the people of Virginia. It should cease as soon as possible.

"2. Neither of these medical schools, between which the State support is divided, has at present the resources to conduct a modern medical school adequate to meet the needs of the State, even upon an economical and modest basis.

"3. Any medical school in Virginia, supported in whole or in part by the State, should be a part of the University of Virginia and under the control and direction of its governing board and president.

"4. Although a few divided medical schools still exist, medical opinion is practically unanimous in the conclusion that to offer the first two years of a medical curriculum in one place and the last two years in another is not only a waste of funds, but results in a diminution of the effectiveness of the school as a whole. A medical school, half of which is in Charlottesville and the other half in Richmond, is no

A Call to Duty.

The members of the Medical Society of Virginia are urgently called upon to exert every

solution of the problem of medical education in Virginia.

"5. If, therefore, the State of Virginia is to support medical education at all, such support should be given to a single medical school situated either in Charlottesville or in Richmond, and in either case, under the direction of the University of Virginia."

"More Oslers than One."

At this hour when Virginia is feeling and thinking upon the important subject of medical education, and approaching an effort at its solution, it is not inappropriate to reflect upon some of the characteristics of one of the greatest medical teachers and clinicians of this time. It is well to think, too, that medical education does not altogether depend on the physical equipment and rich clinical material available; it depends really first and last upon the quality and character of the teachers in charge of the physical and scientific establishment.

In the career of Osler, established in Baltimore from 1889 to 1905, surrounded by a group of picked men, we have an example of the creation of a medical school as a department of a university which has done a great service to America by teaching medicine in a modern scientific way. No medical school can do a great work, no matter whether established in the most ideal way or outfitted in the most elaborate manner, unless its leading teacher corps is composed of broad and able men. It was Osler and his group which made Hopkins the great medical school. It was the combination of his striking personal qualities, his unusual literary gifts, his high professional and scientific accomplishments that made the great medical teacher. About this teacher, "more Oslers than one", was elaborated, a new thought in medical teaching in this country, and a new ideal in scientific medical learning. Welch's ex-temporaneous address on Osler speaks of him in this manner:

"His contributions to medical education, to hospital organization and the development of scientific medicine will perhaps be recognized as his most important work. To him we owe the particular kind of organization of the Johns Hopkins Hospital—of the professional side, the most important feature being the creation of the upper resident staff. That provided for the appointment of young physicians for a period of indefinite tenure; these might, and often did remain until they had really estab-

lished their reputations. No such opportunities existed in this country at that time. That is, I think a very important contribution by Osler. * * * * * Again Osler created a medical clinic of a new order, at least for this country. He brought the senior students into the wards of the hospital not simply to look on at demonstrations, not simply to accompany the physician on his rounds in the wards, but as a part of the actual machinery of the hospital. He also created, in connection with the clinic, the clinical laboratory. Every one of these particular contributions existed in other countries, but not in combination. He was familiar with the organization of medical clinics in Germany, France and England; he took the best, and I think he established a type of organization which marked a great advance in medical education. I speak of these contributions of Osler because I fancy the future historian will recognize them as among the permanent accomplishments, and as marking an important departure and reform in medical education in this country. This conception and the carrying out of this plan we owe to Osler."

"Osler's reputation, while it is founded, I think, on his scientific work, does not rest solely or in the highest measure upon that work. He was a clinical teacher of the most inspiring and stimulating character. I doubt whether the history of medicine records a man who had greater influence upon the students that came under his teaching. He inspired them with a remarkable devotion and loyalty and affection. He was their example. His life embodied his precepts and his students, cherished his words. Cultivate peace of mind, serenity, the philosophy of Marcus Aurelius. Think not too much of tomorrow, but of the work of today, the work which is immediately before you.

"Above all, while I have spoken of Osler as possessed of the naturalist's type of mind, like many other naturalists he was also a humanist. This he exemplified in his teaching, in his work, in his life to an eminent degree. He never imparted knowledge to students as though it had always existed. He interested the student in how the knowledge that we now possess came to be, what were the great epochs, who were the men who contributed. This method of teaching was illustrated by Osler as by scarcely another teacher in the history of medicine. And it is just such a stimulus as this that imparts broad interests to the work of the stu-

dent and to his life's activities as a physician. It is such interests as these that make his work a profession, a learned profession and not merely a trade. Osler was the humanist, then, as well as the naturalist in his attitude toward disease. His life was centered in the work of the hospital and in the work of the Medical School. He was the moving spirit always, not only of the students but of his colleagues."

News Notes

The Annual Conference of Field Workers of the State Board of Health

Was held in the College Hall, Y. M. C. A., in Richmond, from December 27 to 31. It was attended by County Health Officers, Sanitary Officers, Sanitary Inspectors and Public Health Nurses, and invitations were extended to all other Public Health officials, or other persons who might be interested in the program. The purpose of the Conference was to enable the workers to meet with each other and with the Staff to talk over their problems and receive the benefits which might be derived from a free interchange of experiences and ideas. An opportunity was thus afforded to impart new information and instructions to the Field Workers so that they might return to their work with a full knowledge of up to date practices in matters pertaining to the public health.

The program was made up for the most part of subjects which the workers themselves had suggested or asked to have discussed. Every worker presented a paper on a subject of his own choosing and time was allowed for full discussions.

A number of prominent Public Health authorities from other parts of the country were present. Dr. Arthur T. McCormack, State Health Commissioner of Kentucky, gave a most interesting and comprehensive account of public health activities in Kentucky. He paid high tribute to the progress which was being made in this State. Dr. L. L. Lumsden, in charge of Rural Health Work for the United States Public Health Service, delivered an address upon "The Progress of Rural Health Work Throughout the United States During the Past Year". He stated that the co-operative work in which the Public Health Service was participating with the Virginia State Board of Health has proved highly

successful and that the plan which is being followed had a wide range of applicability among counties in which effective health work if begun at all must be begun on a low cost basis. He went on to say, however, that on January 1, 1921, there were in the United States only 154 counties which were provided with Local Health Services headed by Whole Time County Health Officers. This means that less than six per cent. of our rural communities are provided with Local Health Services approximating adequacy in protecting the men, women and children against readily preventable diseases, premature death and economic disaster, resulting from costly sickness.

Major M. J. Shields, First Aid Service, American Red Cross, delivered two intensely interesting and very instructive lectures on "First Aid". Dr. P. W. Covington, of the International Health Board, gave an interesting and much appreciated talk upon "Methods for Securing Appropriations for Public Health Organizations". Dr. K. E. Miller, an officer of the United States Public Health Service, detailed to the State Board of Health of North Carolina, gave an account of the methods which were being carried out in that State.

The attractiveness of the program was greatly increased by the exhibit material provided by the County Sanitary Officers and commercial concerns handling equipment of this character. Prizes were offered to the Sanitary Officers for the best exhibit material which they could furnish, the understanding being that the ideas and workmanship should be their own. The first prize was awarded to Sanitary Officer M. D. Fuller of Chesterfield County, who exhibited a model of a septic tank with drainage field, a home made aquarium, and other material. The second prize was awarded to County Sanitary Officer J. F. Ward of Wythe, who displayed a number of models of sanitary equipment. The third prize was awarded to Field Director Kolbe Curtice of Halifax County, who exhibited a model of a septic tank and closet.

It was the general expression of those who attended that this Conference was the most successful and beneficial yet held by the State Board of Health. The workers returned to their duties properly inspired.

Memorial to Dr. Taliaferro.

As a tribute to the memory of Dr. B. L. Taliaferro, who died recently, the patients at

Catawba have decided to add to the Tuberculosis Foundation of Virginia a Taliaferro Memorial fund which will provide in perpetuity a free bed at the institution to which the noble physician sacrificed his life. A committee of the Catawba patients has started on a campaign to raise \$6,000, the amount needed for the endowment. They and their friends have, in addition to direct contributions, advanced all the money necessary for contingent expenses in connection with the subscription, so that every dollar subscribed actually goes into the fund.

It is not purposed to make any general appeal for funds, as it is felt that the general public will be glad to subscribe and that a mention of the subject through the press will be all that is needed. Checks may be sent to A. Lambert Martin, Treasurer, at Catawba Sanatorium, Va., and a receipt will be returned immediately.

Births in Birth Registration Area in 1920.

The Department of Commerce, through the Bureau of Census, announces that in 1920 there were 1,508,874 births reported in the birth registration area, which included 23 states and the District of Columbia. The rate was 23.7 per 1,000 population, or an increase of 1.4 over 1919. The highest rate, 31.6 per 1,000 was in North Carolina, and the lowest, 18.9 in Oregon. Classifications as to birth place of mother showed that Italy ranked next to the United States as the country of birth of the mother. As to the occupation of the father, it was noted that the highest average in number of children to a family was 4.6 for mining foremen, overseers and inspectors, and the lowest average was 1.8 for soldiers, sailors and marines. The average number of children to a family for dentists was 2, architects 2.1, school teachers 2.3, which figures are in striking contrast to those for mine operatives 4.3, quarry operatives 4.1, bootblacks 3.9, and brick and stone masons 3.9. In farmers' families, the average number of children was 3.8; in clergymen's 3.3, in lawyers' 2.4, and in physicians' 2.3.

Improvements Made on Staunton Hospital.

The King's Daughters' Hospital, Staunton, Va., has recently added a new colored ward and a new obstetrical department. Both have been finished and are now receiving patients. Work will shortly be started on a new operating pavilion.

U. S. Public Health Service Hospitals.

During 1921, the U. S. Public Health Service opened up 17 hospitals and is preparing to add nine other hospitals, four of which will probably be opened by May 1 and the others a little later. All of these have been leased from private owners or taken over from the Army or Navy. Hospitals to be added in 1922 include tuberculosis, general and neuro-psychiatric hospitals.

Increase Proposed In Personnel of U. S. Public Health Service.

To provide adequate medical and surgical care for the beneficiaries of the U. S. Veteran's Bureau, and to promote the efficiency of the U. S. Public Health Service, a bill has been introduced in the U. S. Senate and House of Representatives, providing for the addition of 450 medical officers, 50 dental officers, and 50 officers non-medical scientific personnel. There is an imperative need at the present time for the reorganization of this Service because its duties and responsibilities have increased enormously. The U. S. Public Health Service has done such an excellent work for disabled soldiers, that we trust this bill may become a law to enable the Service to enlarge its activities.

New Superintendent at Catawba Sanatorium.

Dr. J. B. Nicholls has been appointed superintendent of Catawba Sanatorium, Virginia, succeeding Dr. B. L. Taliaferro, deceased. Dr. E. C. Harper, who has for some time been connected with the work of the State Health Department, has been appointed first assistant.

School of Sanitation in Honor of Gorgas.

A committee of Southern physicians, under the chairmanship of Dr. Seale Harris, of Birmingham, Ala., is undertaking the establishment of a school of sanitation at Tuscaloosa, Ala., in memory of the late Major General William C. Gorgas. It will be known as the "Gorgas School of Sanitation", but, though the site will be adjacent to that of the University of Alabama, it is not intended that there shall be any organic connection between the two.

The Tri-State Medical Association of the Carolinas and Virginia

Will hold its annual meeting in Norfolk, Va., February 22 and 23, 1922, under the presidency of Dr. W. W. Fennell, of Rock Hill, S. C. Headquarters will be at Monticello.

Hotel. A large attendance is expected and an interesting program is being planned. Dr. James K. Hall, Richmond, Va., secretary of the Association, will furnish any information requested.

Dr. McGuire Newton,

Of Richmond, has been appointed a member of the State Board of Health to fill the vacancy caused by the death of Dr. Edward McGuire. The term of office expires July 1, 1925.

Dr. Halbert P. Harris

Of the '09 class of the University College of Medicine, Richmond, and who practiced in California until he entered service in the World War, is now located at Wake Forest, N. C.

Some Facts About Mortality Rates.

Figures from the Bureau of the Census indicate that the trend of the death rate from cancer and organic diseases of the heart is upward, while that from tuberculosis is slightly downward. The estimated number of deaths from cancer in the entire United States for 1920 was 89,000. Figures show that the white and colored races are equally susceptible to cancer, but both races seem less susceptible in the South than in the North.

The estimated number of deaths from tuberculosis in the entire United States for 1920 was about 122,000. The highest mortality rate from tuberculosis for 1920 was given for Colorado, while the lowest was in Utah. The high rate for Colorado is evidence not of unhealthfulness of climate, but of the attractiveness of the Colorado climate to those afflicted with tuberculosis.

Married.—

Dr. William H. Goodwin, University, Va., and Miss Mary Stuart Cocke, Hollins, Va., December 27.

Dr. Beverley Randolph Wellford, of N. Y. City, formerly of this city and a member of the class of '17, University of Virginia, Medical School, and Miss Alice Henning Munson, of Richmond, December 31.

Dr. W. B. Hopkins

Has returned to his home in this city after a visit to Miami, Fla.

Dr. G. F. Highsmith,

Of the '12 class of the former University

College of Medicine, this city, has moved from Arcadia, Fla., to Miami, Fla.

Health Measurers Needed For Mothers and Babies in Rural Districts.

From some investigations made in one of the Southern states, under the auspices of the Children's Bureau, of the U. S. Department of Labor, the following features of a general constructive program have been recommended for the conservation of lives and health of older children as well as of mothers and babies. The employment of a county public health nurse; the full-time employment of a well-trained public health official; a conveniently located county hospital; strict enforcement of the birth and death registration laws; strict enforcement of the law to prevent blindness in the new-born; and control of midwifery practice.

Dr. Clifton M. Miller

Was recently elected a member of the City School Board of Richmond, Va., from the third district.

New Doctors in Staunton.

Dr. Guy R. Fisher, formerly of New Hope, Va., and Dr. Homer Henkel, formerly of Brownsburg, Va., after completing an eighteen months' course in eye, ear, nose and throat work in New York, have opened their offices in Staunton, Va.

Child Relief Work Abroad is Extended.

The American Red Cross announced today that the Polish-American committee for Child Relief, through which the American Red Cross operates a large number of child-health stations in Poland, is now extending its help to the recently regained parts of Upper Silesia, restored to Poland by the League of Nations. During the long-drawn dispute over this territory and the unsettled condition of the past two years, the children of the mining and factory districts have suffered severely. A heavy increase in tuberculosis is noted throughout the area.

The Red Cross and the Polish-American Committee have just made a joint gift of clothing to children in Silesia, including more than 100,000 overcoats, shoes, suits and stockings.

Dr. L. E. Walton,

Recently of the C. & O. Hospital, Clifton Forge, Va., has moved to Marlinton, W. Va.,

In October he was elected secretary of the Alleghany County, Va., Medical Society.

New Hospital For Wilmington, N. C.

Drs. Ernest Bulluck and Ralph Davis, of Wilmington, N. C., are building a modern hospital of thirty beds in the heart of that city.

Dr. Burnley Lankford

Has been elected a member of the executive committee of the Norfolk branch of the University of Virginia Alumni.

Miss Fannie Nunnally, R. N.,

A graduate of Stuart Circle Hospital, this city, has been appointed superintendent of Rockingham Memorial Hospital, Harrisonburg, Va. Miss Nunnally has recently been located in West Virginia.

Dr. Julian M. Robinson

Has been elected post commander of the Danville, Va., Post, American Legion, for the coming year.

Dr. Charles R. Robins,

Of Richmond, recently addressed the students of the College of William and Mary, Williamsburg, Va., his subject being "The Opportunities in Medicine".

Dr. and Mrs. H. A. Spitler,

Purcellville, Va., last month enjoyed a visit to Luray, Va.

Dr. and Mrs. F. E. Hamlin,

Of Staunton, Va., have been spending sometime in Durham, N. C., where Dr. Hamlin has been recuperating from a recent severe attack of pneumonia.

Dr. A. L. Gray,

Of this city, recently visited his mother at Palmyra, Va.

Dr. H. M. Snead,

South Hill, Va., has returned home after a hunting trip to Fluvanna County, Va.

Dr. Gerald A. Ezekiel,

Richmond, Va., has been assigned to the 305th Medical Unit, with the rank of major, in accordance with the assignment orders for the 80th Division, Officers' Reserve Corps.

Dr. and Mrs. Joseph S. Hume,

Norfolk, Va., have been recent guests of relatives in Richmond.

Dr. F. A. Ward,

Recently of this city, has located in Suffolk, Va., where he will continue in the practice of diseases of the eye, ear, nose and throat.

Dr. Lorenz Well Received in New York.

In spite of opinions which have been expressed from various parts of the country, it would seem that Dr. Adolf Lorenz, the Austrian surgeon who held public clinics in New York City, has been well received there. On the 12th of December, he delivered an address before the Society of Medical Jurisprudence at the New York Academy of Medicine, and received a warm reception.

Radiological Society of North America.

Dr. Russell D. Carman, Rochester, Minn., was elected president of this association at its annual meeting in Chicago, in December.

Centenary of Pasteur.

We are advised plans are under way in France for the celebration of Pasteur's centenary in 1923. The event will be in the form of an international exhibition of hygiene and bacteriology to be held from May 1 to October 31, 1923, at Strasbourg, where Pasteur began his wonderful researches. A monument to Pasteur will be unveiled at the same time.

A Bit Encouraging.

We understand that Merchants and Miners Transportation Company, with head offices in Baltimore, has declared its first dividend in several years. While not a large one, it indicates an improvement in business conditions and is proof that the shipping and travelling public approve the service of this company. These people are among our advertisers and we hope that we have, at least in small degree, contributed to this success. May this be the precursor of more prosperous days in all lines of business.

Dr. W. T. Wimbish,

Who was located at Clarksville, Va., before entering the Medical Reserve Corps during the war, is again in private practice and is located at Benbush, W. Va.

Dr. T. Neill Barnett,

Of this city, is taking a special post-graduate course at Harvard University, Medical School, in diseases of the stomach. He expects to return to Richmond about the middle of February.

Dr. W. W. Fennell,

Rock Hill, S. C., president of the Tri-State Medical Association of the Carolinas and Virginia, visited friends in this city early in January, when returning to his home from a visit to New York City.

Hospital Opened in Norfolk.

The new Mt. Sinai Hospital was formally opened in Norfolk, Va., December 29. More than 1,000 invitations were issued for this event to members of the medical profession and to subscribers to the fund that made the new hospital possible.

Location with Small Acreage for Doctor or Anyone Wanting Farm with Small Acreage.

This property is in the western part of the State in a village of about 150 to 200 inhabitants and on a railroad. The practice is practically unopposed. The property consists of an 8-room house in good condition, well under shelter; an office, barn for six horses, garage, corn crib, and other out buildings on 30-acre tract with about 70 fruit trees beginning to bear. It is within half a mile of two churches, store block, smith shop, Masonic hall, school (2 rooms) in front of house, and garage across the road. Can be bought for \$5,500 on the right kind of terms. Write, "T. A. G." care this journal. (Adv.)

Obituary

Dr. Dirk Adrian Kuyk,

A widely known and beloved physician of this city and a specialist in diseases of the eye, ear, nose and throat, died at his home December 16, after an illness of three weeks with influenza and pneumonia. He was born in Holland 57 years ago and came to this country when five years of age. His medical education was received at the Medical College of Virginia, from which he graduated in 1885, and he was for a number of years a member of the adjunct faculty of that school. He was a member of various medical associations including the Medical Society of Virginia. He is survived by his widow, Dr. Margaret Kuyk, who is a member of the faculty of the University of Richmond.

Dr. Don H. Scott,

A widely known physician of Amherst County, Va., died suddenly December 28,

while visiting a patient at Monroe, near his home. He was 64 years of age and had been in failing health for some months. He was graduated from the Medical College of Virginia in 1884 and practiced for a time in Bedford County, before moving to Amherst county twenty-eight years ago. He twice represented his county in legislature. He was a shriner and a member of several fraternal organizations, and was a member of the Medical Society of Virginia. Dr. Scott is survived by three sons, one of them Dr. David P. Scott, of Lynchburg, and a large family connection.

Dr. Perry J. Muncy

Died at his home in Ferrum, Va., December 8, after a brief illness with pneumonia. He was thirty-two years of age and a graduate of the Medical College of Virginia in 1917. For a time he was located at Bayard, W. Va. The interment was made at his former home. Pearisburg, Va. He is survived by his wife and a daughter. He was a brother of Dr. J. B. Muncy, of Jonesville, Va.

Dr. Isaac M. Taylor,

Superintendent of Broadoaks Sanatorium at Morganton, N. C., died of heart disease. November 26, aged 64 years. He was prominently identified with medical interests of the State of North Carolina and was president of the Board of Medical Examiners in 1915-1916.

Dr. Edwin Gilliam Booth,

A prominent citizen of this State and one of the few surviving officers of the Confederate States' navy, died at his home in Williamsburg, Va., January 5. He was born in Nottoway County, Virginia, and studied medicine at the University of Pennsylvania, from which he graduated in 1861. He is survived by several children, one of them Dr. J. Thomson Booth, of Asland, Va.

Dr. John J. Goodwill,

A graduate of the Medical Department of the University of Virginia in 1908, died of pneumonia on December 2, at his home Laurel Hill, N. J. He was 36 years of age and served for eighteen months overseas during the World War.

Henry Plato Underhill,

Of Wendell, N. C., died November 18, in a hospital in Raleigh, N. C. He was 44 years of age and a graduate of the former University College of Medicine at Richmond, in 1901.

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RADICULITIS AND NEURITIS CONTRASTED.*

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Both these terms are misnomers, as inflammation is not necessarily present in either of the clinical states known as neuritis and radiculitis.

Although localized inflammation of the spinal roots had already been found post mortem in 1896, by Dejerine and Thomas, and although the syndrome radiculitis had in the meanwhile become recognizable and has been intensively studied, principally in Dejerine's Clinic ever since, very little attention has been given it in America except on the part of a few neurologists. In the presentation which follows, I have permitted myself to extend somewhat the very strict interpretation by Dejerine of the term radiculitis. Although he later admitted that tabes dorsalis was merely the consequence of degeneration of the posterior roots, he did not include that syndrome in that of radiculitis. He also excluded those affections of the roots caused by neoplasm or productive inflammation, and he did not consider at all the post-ganglionic implication of the trunk of the nerve by the spread of bony or articular inflammations or the pressure upon the nerve trunk by narrowed canals (neurodicitis). In this he was entirely justified; but as clinically neuronal irritation of the intervertebral foramen is, as regards the neurological signs, indistinguishable from radicular irritation itself, I have taken it upon myself to include in the consideration of radiculitis the trunculitis caused by osteoarthritis of the spine. Furthermore, I have not excluded disorders because of their symmetry, progressiveness, nor do I see reason to refuse to accept in the radicular syndrome cases where the sphincters are involved, when it is by lesion only of the lower sacral roots.

The name NEURITIS was given because of the occurrence of pain, which led to the assumption that inflammation in the usual sense was the cause. Early studies of the pathology of nerves in this state seemed to confirm this, in that there was a disintegration of the nerve tissue; but this, when unaccompanied by serous exudates or infiltration of white cells, and when not followed by proliferation of connective tissue, cannot be legitimately entitled inflammation in the usual sense. What really happens is a *degenerative process*, which causes heightened irritability of the neurofibrils.

These remarks are equally true of the condition of the spinal roots known as radiculitis; for the syndrome may be caused by pressure merely. Many cases of so-called neuritis are merely instances of pressure also.

RADICULITIS may be defined as a clinical syndrome, the anatomical basis of which is an interference with any portion of a spinal nerve between its emergence from the spinal cord and its leaving the intervertebral ganglion to constitute the peripheral nerve. That is to say that it is a *pre-ganglionic* affection, and may affect either the sensory or the motor root or both.

To post-ganglionic affections is given the name of *peripheral neuritis*, and these must necessarily implicate both sensory and motor constituents of a mixed nerve, although either of these may be functionally impaired in so slight a degree as to be clinically inconsiderable, as, for instance, in the case of lead poisoning, which is believed to affect the sensory far less than it does the motor elements.

In both radiculitis and neuritis, it is usually *pain* which leads the patient to seek advice; although in some cases, especially of anterior root disease, weakness and atrophy may be the only complaint. In neuritis, pain is always accompanied by *tenderness*; and this is more especially so of the *deep tissues*, although in some cases of polyneuritis, cutaneous hyperaesthesia too may for a time be excruciating. In the less obvious cases, firm pressure is required to elicit this sign. It is a most im-

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

portant one and is serving as one of the chief differentiations from radiculitis, in which there is no increase of tenderness, but, on the contrary, usually a decided diminution of the sense of pain on firm deep pressure. The explanation of this is that interference with a root only is distal to the trophic center, the intervertebral ganglion. Hence, there is no deterioration of the peripheral nerve, but merely an interruption of conductivity after the impulses reach the affected portion of the root.

It is true that in some cases of actual inflammation of the root, there may appear to be an increase of sensitivity to painful stimuli; but that is due to erethism of the inflamed tissue; it is of the same order as that found in meningitis.

INTERFERENCE WITH CONDUCTIVITY of sensory impulses is present in both conditions. The differentiation has to be made by the distribution of the loss. To do this the distribution of each peripheral nerve as well as the overlap of contiguous nerves must be known. Particularly in the arm, this does not correspond with the zone of distribution of the spinal roots. The anesthesia may be exceedingly variable from day to day in cases due to radicular pressure; especially when that is caused by tubercular infiltrations or syphilitic exudates; for in both of these the reparative processes as well as the vascularization are most variable. This is also the case in some instances of tumor pressing upon the roots, although as a rule the symptoms are progressive with intermissions of only short duration.

The *different modalities of sensation* may be affected to different degrees. This may reach the extent of simulation of syringomyelia, more especially in tubercular disease of the meninges, where marked loss of pain and temperature conductivity may be scarcely accompanied by any impairment of the senses of touch and attitude. Strangely enough, the contrary is usually the case in syphilitic radiculitis, where before there is any considerable loss of pain and temperature sense, the attitude sense may be so impaired as to lead to an ataxia of locomotion.

The same syndrome may occur for a time in peripheral neuritis; but an increase of the deep pain sense in the latter enables the diagnosis to be made even without the presence of motor enfeeblement and atrophy, which usually occur along with the trophic changes known as

glossy skin, and brittleness of the nails. This is the condition known as pseudo tabes.

MOTOR WEAKNESS AND ATROPHY occur in both neuritis and radiculitis provided the anterior roots are implicated. This is particularly shown in meningeal tuberculosis, in which for a time it may be the only sign. But even in the syphilitic radiculitis, which leads to true tabes dorsalis, there occurs some degree of motor impairment through the anterior roots being affected also. The speedy repair of this through absorption of exudate and regeneration of fibers often prevents its detection, except in the case of the motor nerves of the eyeball, where the symptom of diplopia draws attention to it. It is fortunately now less common to have this empirically treated by prisms without investigation as to its cause and the direction of treatment to that.

In the limbs, the muscular atrophy may lead to *deformity* of the joints through contracture of the tendons unless precautions are taken, both in radicular and neural affections.

In the MOTOR SPHERE the distinction between neuritis and radiculitis is again to be made by knowledge of the distribution of each root and peripheral nerve. The exact distribution of all the roots of the brachial plexus is not completely known; while the distribution of the peripheral nerves is well understood. Investigation of wounds of the plexus and roots during the war have permitted a delimitation of some doubtful distributions, more particularly of that of the sixth and seventh cervical roots. These have been embodied in a new schema of the plexus now exhibited, which shows that the triceps receives fibers only from the seventh root. Supinator longus is supplied by the sixth root only, whereas both are supplied by the musculospiral nerve. These situations apply, of course, only to a plexus which is neither preaxial nor postaxial in placement.

Hence, if only one of these muscles is paralyzed from a lesion in the neck, we can affirm this to be radicular and not peripheral; and, if surgical intervention is indicated, a dissection of the plexus will be avoidable, while a laminectomy may be required.

THE REFLEXES furnish no differentiation between radiculitis and peripheral neuritis, as they are impaired in both conditions to a degree corresponding with the gravity of the lesion and its topography.

TROPHIC CHANGES, as aforementioned, indi-

cate peripheral disease except in the case of perforating ulcer and Charcot joint, which may occur in tabes dorsalis; but even these are regarded as being provoked by persistent trauma tolerated by the patient because of anaesthesia preventing the forced rest which pain would otherwise compel. Modification of hair growth and of sweat production may occur in radiculitis also, this because the vasomotor fibers forming the rami communicantes run in the spinal root. These changes do not reach the degree seen clinically in peripheral neuritis, as a rule.

PATHOLOGY.—The pathology of the two conditions offers a striking contrast. The common sources of radiculitis are *syphilis* and *tuberculosis*, which almost never affect the peripheral nerves directly. In each case there is a pressure on the roots by the exudate which collects in the narrowing meningeal sheath during its reflection upon the spinal root as it passes toward the intervertebral foramen. Indeed, it is possible that the symptoms are less due to inflammation than to strangulation proper.

In neuritis, a *strangulation* pathogen also plays a part where a peripheral nerve is passing through a bony canal, as in the aqueduct of Fallopius, facial paralysis being perhaps the commonest of all, or through an aponeurosis such as the fascialata, neurodocitis.

But an even more important pathogen is *toxin*; for this may affect all the peripheral nerves and form the clinical picture of polyneuritis, which may even reach the degree of total paralysis. Fortunately, the cranial nerves and diaphragm usually escape; although in the alcoholic variety the vagus may be so affected as to cause death.

The toxin from a *septic focus* may produce a neuritis, usually mild, often localized to the area through which the lymphatics drain the abscess, as then toxins pass up the nerve sheaths of the neighborhood. This mechanism has been experimentally proved. Neuritis, too, of an individual nerve, may occur in consequence of the general diffusion of toxin.

SYSTEMIC DISEASES AND THE PERIPHERAL NERVES AND ROOTS.

That only a single nerve should be attacked by a process which is systemic in its disturbance is to be explained by local differences in the tissues around that nerve. Instances are afforded by the effects of previous trauma or

disease and by interference with circulation through disturbance of vascular supply. But it is not always necessary to have recourse to these explanations; for the anatomical surroundings of certain nerves render them particularly vulnerable to pathological processes. The result is that quite a mild inflammation causing only a slight swelling, is capable of producing severe functional impairment of the nerve.

Again, while spinal roots are leaving their ganglion and passing through the intervertebral foramen, they are once more subjected to the risk of compression, either by a fibrositis of the lining of the canal or by bony compression through the giving way of the vertebra as a result of osteoporosis.

Many sciaticas and brachialgias are believed to originate in this region. The name neurodocitis has indeed been given to an inflammation produced in this way. Others have called the condition funiculitis.

Another locality where a nerve is liable to be affected is the situation where it penetrates the aponeurotic sheaths of the muscles of the deep fascia. Meralgia paraesthetica is the best known form of this condition.

While toxi-infectious conditions may be responsible for any of the foregoing syndromes, yet they do not seem to be essential; for in the majority of instances, where a neuralgic attack originates in one of these situations, there is no evidence whatever of the more acute type of intoxication.

There is, however, in many instances, evidence of *disordered metabolism*. This disorder is of the type which our predecessors called lithemia and which had within our own memory a great vogue as uric acid diathesis. The present writer attributes the majority of cases of this type to an impaired protein metabolism, for such patients show other signs attributable to metabolic disorder, either at the time of examination, subsequently, or in their former history. Furthermore, their antecedents and collaterals show numerous instances of the same disorder. The most conspicuous of these are increased arterial tension, nephritis, migraine, so-called chronic rheumatism, apoplexy. Patients of this kind have been called by French writers arthritic. The writer has found that cases within this category are rapidly and often permanently benefited by a diet which effects an improvement in the metabolism through prevention of pro-

tein overload, by favoring adequate heat production by means of sufficient carbohydrates and by facilitating tissue interchange through the provision of a sufficiency of fruit salines, whilst of course preventing all possible causes of metabolic stagnation, such as constipation, inactivity whether bodily or mental, and compensating any insufficiencies of glandular action when these are present. Treatment on these principles has benefited most of the cases of neuralgia which local treatment has failed to benefit and which are not attributable to lesions of mechanical or infectious origin.*

Another factor which enters into the pathogenesis of mild neuritis and neuralgia is endocrine. Empirically many observations have been made of disappearance of neuralgias through the giving of thyroid gland. I doubt very much if this is a specific endocrine reaction. It seems more attributable to the betterment of metabolism whereby detoxication is favored. Of this we have warrant in the experimental work which has shown how hypothyroida increases the effect of toxins, and how giving thyroid substance decreases it. A scientific study of the hormonal effect of endocrine substances is much to be desired, both in states where endotoxins seem to be responsible, and perhaps also in cases of chronic infection.

A clinical syndrome intermediate between radiculitis and peripheral neuritis is induced by the compression or irritation of the roots as they pass the intervertebral foramen in a state of arthritis. Although we are really dealing with a peripheral neurodocitis, yet the distribution of each nerve is that of the root which constitutes it, for not even the posterior primary division has yet left it. Hence, the differentia depending upon the distribution of separate bundles are not yet at our disposal.

TREATMENT OF RADICULITIS.—Necessarily a difference of treatment follows this difference of pathology. Radiculitis if syphilitic must be treated by arseno-benzol preparations and mercury as well as by correct hygiene.

Tubercular radiculitis requires enforced rest by an immobilizing apparatus, along with abundant nutrition, air and light, and sometimes surgical measures.

If a *neoplasm* is the cause, it must be removed surgically, or dealt with by the X-ray. One of the most obstinate affections of a root,

although it is in reality already a peripheral nerve, is that consequent to *arthritis* of the spine; for in the first place the arthritis is a difficult matter to deal with, even when secondary to focal sepsis, and when this can be removed; for, in spite of this, the osteopathic results of the arthritis may be permanent and a compression neurodocitis persist. In the second place, this condition may go on for years without diagnosis, as it is too readily attributed to lumbago, rheumatism, or sciatica and treated empirically and futilely.

A jacket relieves some of these cases markedly; but it seems to the writer that vertebral stretching in the early stages might prevent a distressing future incapacity.

In radicular sciatica all measures may fail and it may be necessary to stretch the root envelopes by the injection of normal saline through the caudal foramen.

TREATMENT OF NEURITIS.—Neuritis must be treated in accordance with its cause, i. e., the detection and elimination of mineral or other poison, when the nerves will regenerate spontaneously. Local sepsis must be sought for and eliminated. In neurodocitis, local application of heat, radiant energy, electrical ionization are sometimes highly beneficial. Massage is nearly always an advantage if properly given.

The *metabolic* condition I look upon as of supreme importance in many of these cases. Even the most obstinate sciaticas may yield in a week or two to carefully considered metabolic regulation. Where there is evident endocrine abnormality, internal secretions may have to be administered also.

The *mental disturbance* due to pain and lack of sleep must be dealt with also; but one cannot protest too strongly against the indiscriminate giving of anodynes and narcotics; for these disturb metabolism, and interfere with repair. In a long continued case, they produce addiction, which is a most troublesome tendency to get rid of. For restlessness and insomnia, the best measures are physiotherapeutic, especially hydrotherapy.

CONCLUSIONS.

Thus we have shown that these two conditions, which symptomatically seem to resemble one another so closely, when they are properly analyzed and differentiated, contrast in nearly every particular, in the nature of the sensory augmentations and losses, in the distribution

*See my paper, "Polyneuritis of Infectious Origin," Medical Record, Dec. 31, 1921.

TABLE OF DIFFERENTIA.

SYNDROME.	NEURITIS.	RADICULITIS.
Definition -----	Irritation of peripheral nerves-----	Irritation of spinal root.
Pathogen.		
Toxine -----	The usual cause -----	Doubtful.
1. Chemical poisons. Alcohol or metals, especially arsenic or lead -----	Frequent -----	Doubtful.
2. Bacterial poisons aside from local exudation, especially diphtheria and influenza-----	Occasional -----	Doubtful.
3. Diffuse metabolic poisons. Lithemia, Arthritism -----	Occasional -----	Doubtful.
4. Endocrine unbalance -----	Possible -----	Doubtful.
5. Focal infection -----	Occasional -----	Doubtful.
Tuberculosis -----	Scarcely -----	Frequent.
Syphilis -----	Rarely -----	Commonest cause.
Neoplasm -----	Occasional -----	To be suspected.
Physical agencies. Cold, trauma, etc. -----	Occasional -----	Especially trauma.
Concomitant of arthritis-----	Of the neighborhood -----	In the spine.
Pathology -----	Usually degenerative from toxicosis, by strangulation, by neurodocitis -----	Often inflammatory by strangulation, by inflammatory or neoplastic compression.
Onset. -----	Often abrupt -----	Insidious.
Symptoms,		
Pain -----	Except in plumbism or pure motor N. -----	Usual when posterior root is affected; lightning pains, Dejerine's sign, i. e., shooting pains on coughing, sneezing and straining.
Tenderness -----	Characteristic, especially of deep tissues -----	Absent or minimal.
Conductivity -----	Impaired -----	Impaired.
Hyperaesthesia -----	Except in early stages, irregularly progressive -----	Except in early stages, irregular, progressive.
Sensory dissociation -----	Pseudotabetic but never truly of tabetic type -----	Occasionally of Syringomyelitic type in tubercular R. Of tabetic type in syphilitic.
Motor Weakness -----	Usual -----	When anterior root affected best marked in tubercular R.
Atrophy -----	Severe except in mild cases; of long duration -----	Less evident except in tubercular R.
Deformity -----	Contracture and stretching of tendons and ligaments -----	Contracture and stretching of tendons and ligaments less marked.
Reflexes -----	Impaired except at first -----	Impaired.
Trophic Changes -----	Early and evident -----	Scarcely.
Extent -----	According to distribution of nerve affected. In polyneuritis more marked peripherally -----	In the segmental distribution of the roots affected.
Spinal Fluid -----	Normal -----	Increased pressure, albumen, white cells, etc.
Diagnosis -----	Increased deep tenderness with or without hyperaesthesia. Syndrome conforms to distribution of peripheral nerves -----	Hyperaesthesia both cutaneous and deep. Syndrome conforms to distribution of roots.
Differential Diagnosis -----	From trauma, osteitis, arthritis, myositis, meningitis, poliomyelitis encephalitis -----	
Prognosis -----	Highly favorable upon removal of cause -----	From the same.
Treatment -----	Elimination of the pathogen. Metabolic regulation. Physical agencies to stimulate local nutrition -----	Unfavorable in proportion to destruction of sensory fibers. Favorable as regards motor fibers except when dense cicatrices have occurred.
		Removal of the pathogen. Rest of the regions affected.

of muscular weakness and atrophy, in the trophic disturbances, and above all, in the pathology and in the treatment which is required. Hence, the importance of the differential diagnosis of these conditions cannot be too strongly emphasized.

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PYELITIS.*

By R. S. FITZGERALD, M. D., Richmond, Va.

The kidneys are situated in the hypochondriac region on either side of the vertebral column, behind the peritoneum. The right kidney is a little lower than the left, probably because of the superimposed liver. The left kidney extends from the level of the interval between the eleventh and twelfth ribs, near the spine, to the level of the third lumbar spine. Each organ is inclined forward and inward so that their upper portions converge. The outer border faces upward and backward, the lower downward and forward. The kidneys are fixed in position by a series of short blood vessels, the parietal peritoneum, the pressure of the abdominal viscera, and a fibrolipomatous sheath called the renal fascia. This fascia is formed by a splitting of the subperitoneal connective tissue, enclosing the kidney in a pocket and passing inward as a single layer to cover the great blood vessels.

The kidney of average size is four and a half inches long, two and a half inches broad and one and a half inches thick. It weighs about four and half ounces.

The kidney usually is a brownish red color. It is fairly firm in consistence. The kidney is enclosed in a proper capsule of fibrous tissue, beneath which lies an investment of unstriped muscles. The solid part of the organ is composed of the cortical layer, containing the Malpighian glomeruli, which are the beginnings of the uriniferous tubules and the medullary layer, containing the straight and spiral portions of the uriniferous tubules as well as the collecting tubules. These collecting tubules are arranged in separate pyramidal masses, the pyramids of Malpighi, the apices of which form papillae projecting into the sinus. They are separated from each other by the cortical substance which envelopes them on all sides except in the region of the papil-

lae. The papillae project into the calices or infundibula, which are the diverticula into which the ureter subdivides. When the ureter reaches the sinus, having passed in by the hilum, it dilates into a funnel-shaped sac called the pelvis. The blood supply of the kidneys is especially abundant. The lymphatics pass to the glands of the lumbar plexus lying near the hilum. The nerves are abundant and supplied with ganglia which come from the sympathetic system.

Pyelitis is an inflammatory or suppurative condition of the renal pelvis and its calices. Where there is associated with this an inflammation of the kidney substance itself, we have a pyelonephritis. This condition is usually due to an ascending infection from lower portions of the urinary tract. In all cases of supuration of the kidney, especially in the ascending forms, there is constriction of the ureter or other obstruction of the flow of urine, due to calices, new growths, pressure upon the ureter, prostatic hypertrophy, etc. If this condition continues for any considerable length of time, there is stagnation of urine and pus in the renal pelvis and its calices, resulting in destructive changes of the renal parenchyma with its subsequent conversion in many cases into a pus filled sac. In almost all cases in which the renal pelvis is diseased, we meet with involvement of the ureter and its surrounding tissues, urethritis and periurethritis, leading frequently to subsequent constriction of the ureter and secondary pyonephrosis.

The pyelitis consecutive to inflammation of the kidney substance is of minor importance in the majority of cases, although, on the other hand, a renal inflammation which follows pyelitis is of very great significance, being associated almost always with far more serious symptoms and a much worse prognosis than the pyelitis itself.

ETIOLOGY: To get a proper conception of the various inflammations of the kidney and its pelvis, it is absolutely essential to understand the causes involved both as primary and accessory factors.

Practically all forms of inflammation of the kidney are due to bacteria, but in many cases, probably the majority, other etiological factors must be present before infection occurs. In certain cases we may have a pyelitis or pyelonephritis due to various poisons or drugs or to the toxins produced in various diseases. The

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Read before the Richmond Urological Society, December 10, 1921.

bacteria may reach the kidney or its pelvis by an ascending infection from the bladder and ureter, by descending infection from the blood stream, by way of the lymphatics, by contiguity from neighboring organs or tissues, or from other portions of the kidney itself, or directly, from without, by means of penetrating wounds.

Under normal conditions, the kidney and pelvis show marked resistance to infection, as bacteria of various kinds have been injected into the blood and into the bladder and no infection occurred unless some trauma or impediment to the flow of urine has been artificially produced. The normal urine itself possesses distinct bactericidal properties, this probably being due to acid phosphates present. When the resistance of the kidney or its pelvis has been lowered, infection may occur and we may have one or several of the forms of inflammation previously mentioned. The degree of infection in the individual case depends unquestionably to a certain extent upon the number, virulence and character of the invading bacteria and their mode of entrance.

BACTERIOLOGY OF PYELITIS, PYELONEPHRITIS AND SUPPURATIVE INFLAMMATIONS OF THE KIDNEY:—A great variety of bacteria have been found in these conditions, much the same flora, in fact, as those met with in cystitis, although the relative frequency of the different species is quite different. Among the organisms found may be mentioned staphylococcus pyogenes aureus and albus, streptococcus pyogens, diplococcus ureae liquefaciens, a urea-decomposing white staphylococcus pneumococcus, bacillus proteus vulgaris, typhoid and colon bacilli, gonococcus, and various bacteria and microorganisms. Typical pyelitis is that met with in ascending or urogenous infection, while that consecutive to renal inflammation is not likely to be so severe or to show such marked pathological changes.

In ascending pyelitis, the pelvis of the kidney shows a most variable picture, according to the type of infection, its duration, its virulence, and with what factors it is associated. The urine in mild acute cases may be slightly cloudy, the cloud consisting of pus cells, mucus a few epithelial cells, red blood cells and bacteria.

Acute catarrhal pyelitis gives the typical picture of an acute inflammation; the mucous membrane is congested, swollen and hyperemic, while on its surface may be seen red blood

cells, pus cells, a few desquamative epithelial cells, mucus and bacteria in greater or less amounts, phosphates and oxalates, if the urine has been rendered alkaline.

CHRONIC PYELITIS. In this the picture is quite different. The mucous membrane is grayish or brownish red in color, discolored spots frequently mark the remains of the old hemorrhages, the mucous membrane is frequently pigmented and practically always markedly thickened, while the veins are large and tortuous. The covering of the mucous membrane is markedly dependent upon the nature of the infection and especially upon whether the urine is acid or alkaline. If the urine is acid in reaction, the coating is thin, while in alkaline urine this coating is thick and as a rule mucopurulent, with foul odor and with phosphate and oxalate crystals embedded in it. Ulceration is much more frequent in the acute form, though it may occur in the chronic variety.

The corresponding ureter is usually involved in cases of ascending pyelitis, although in rare instances it may be entirely normal, although the bladder below and the renal pelvis above are markedly diseased. It is often affected along its entire course, while especially important are the changes about the urethral openings into the bladder, the orifice may be dilated and surrounded by a markedly congested mucous membrane, or it may have a punched out appearance with induration and congestion of the surrounding tissues, very suggestive of an ascending infection. A diseased condition of the mouth of the ureter is one of the most important diagnostic signs of renal infection. The changes in the ureter are much more common in the ascending infection, although frequently met with in the descending type of the disease.

SYMPTOMS: Acute pyelitis is usually characterized by a sudden onset of severe pain in the lumbar or lower abdominal region. There is often rigidity of the muscles, and tenderness of these parts. The patient often complains of nausea and may vomit and frequently has a chill. Frequent and painful urination is a valuable sign. The urine in the majority of cases contains large amounts of pus and some albumen.

Many cases of pyogenic infection of the kidney and of its pelvis are peculiarly devoid of characteristic symptoms, although careful examination, especially of the urine, should throw

light on a considerable portion. In every case of doubtful etiology, especially if associated with slight pain or sensitiveness in the back or either flank, with vague febrile symptoms, or with constitutional disturbances without definite cause, a careful urinalysis should be made, with the use of a cystoscope and the kidneys catheterized. In pyelitis associated with calculus and after various irritating drugs, the symptoms are more likely to be characteristic.

Pyelitis may last for years with practically no symptoms. In acute pyelitis we have the usual symptoms of acute inflammation, fever, chills, constitutional disturbances, while in the chronic form acute exacerbations are frequently met with, the symptoms usually resembling those of acute attacks, while in between the attacks the symptoms may have entirely disappeared or become very slight.

It is not at all uncommon for the acute cases and the exacerbations of the chronic cases to be regarded as appendicitis, while mild cases are frequently regarded as lumbago. Pyelitis and infection of a postcecal appendix or an appendix lying low in the pelvis and adherent over the ureter are always confusing.

I have had a case in which patient had many bladder symptoms, frequent and painful urinations and considerable number of blood and pus cells in the urine. Operation revealed appendiceal abscess. The most important factors in making a differential diagnosis between acute pyelitis and infections of the abdominal viscera are a carefully taken history, an examination of catheterized urine, and a cystoscopic examination, catheterizing both kidneys. The temperature in appendicitis is more constant as a rule than in pyelitis and chills are much less frequent. Acute infection of the gall-bladder frequently causes chills and an intermittent temperature resembling that of pyelitis.

Acute pyelitis frequently accompanies pregnancy and the puerperium and, if only a chemical test is made of the urine, toxemia of pregnancy may be suspected. In acute pyelitis, the patient usually complains of extreme weakness, chills, fever and often profuse sweats, complete loss of appetite and localized pain, sometimes also pain and increased frequency of urination, even when cystitis is not associated with it. There is sometimes diarrhoea, while nausea and vomiting are quite common. The pulse is usually rapid and full.

These symptoms usually last for a few days and then gradually merge into the chronic form. In the chronic form the patient may have increased thirst due to polyuria. Appetite is usually diminished, and dyspeptic disturbances frequent.

In the diagnosis of renal infections many questions suggest themselves. Are we dealing with a disease of the kidney or its pelvis; if so, of what nature? Are one or both kidneys affected? If operation is under consideration, is the remaining kidney able to properly perform the renal functions?

The most important element in the urine is pus but, in addition to this, the specific gravity, the reaction, and the amount of albumen should be determined and the sediment carefully examined for red blood cells, epithelial cells, mononuclear leukocytes, casts, bacteria, bits of renal tissue, fragments of stone, parasites, etc. Whenever we wish to determine whether the kidney is involved and, if so, to what extent, we should make use of the so-called functional test. Although this can not be definitely relied upon, it is a great help in the diagnosis. A cystoscopic examination should be made by all means to show whether you have cystitis or not, and also to carefully inspect the ureteral orifices, for by their appearance we may often determine which kidney is affected and noting whether the urine spurts from these orifices often helps in the diagnosis.

PROGNOSIS: The cause and prognosis varies markedly in different cases, depending upon the character and virulence of the infection, the accessory etiological factors present, the drainage of the kidney, the presence or absence of complications, and the general physical condition of the patient.

In acute pyelitis the course is usually rapid, the acute stage rarely lasting more than a few days; in very rare cases death may occur quickly, due to anemia with uremia, although, as a rule, the condition is either cured or becomes chronic. If proper treatment is inaugurated, cure is usual where the cause is transient or easily removed, as in the case of irritating drugs. The course of chronic pyelitis is very variable; it may be present for many years. The symptoms may be very slight with no appreciable impairment of general health, this being especially likely to occur in infections with the colon bacillus and

cases of chronic pyelitis of more than five years' duration.

TREATMENT. Some of these tubules form pus sacs. Catheterization of the kidney may give normal urine and even when the catheter has been in place for several hours the urine may be normal and then suddenly become loaded with pus, by one of these tubules exploding and filling the urine with pus.

The most important thing in the treatment of pyelitis is elimination, both by the intestinal and urinary route. The bowels should be kept moving freely and large amounts of fluid given. If sufficient water is taken, no drugs will be required to render the urine bland.

Urotropin has for a long time been the drug of choice. The action of urotropin depends upon the acidity of the urine, causing formaldehyde to be liberated and, as that remains in the bladder for at least two hours, it causes an antiseptic effect. The patient should be kept in bed at an equable temperature. It is especially important to avoid being chilled or getting feet wet. The diet should be simple. Milk or buttermilk is often best; all irritating drugs and highly seasoned food should be avoided. Ice bag may be used, although hot applications or hot water bags are more grateful to the patient. Sweats and warm baths often give wonderful relief. If the fever is high, phenacetine and quinine or some such remedy is indicated. If the pain is very severe, dry or wet caps or hot compresses give good results. In case of sleeplessness, bromides or veronal may be given. The administration of urinary antiseptics by mouth, such as urotropin salol, uva ursi, balsams, all have their places.

Treatment locally has a most satisfactory effect. Washing out the renal pelvis thoroughly with sterile water, followed by some silver salt solutions should be done by all means, and especially if there is any temperature as this lowers the temperature and relieves the pain.

The technique employed for washing out the kidneys is the passage of a soft ureteral catheter through a cystoscope up to the renal pelvis, and irrigating with boric acid solution until the fluid returns clear. Following this fill the pelvis with a 2% solution of silver nitrate and then let it drain out through the catheter, or you may use a solution of mercuriochrome-220. This procedure should be re-

peated about every five days where you find much swelling and edema, and where the inflammation is very pronounced, the catheter should be left in the ureter and the kidney irrigated freely every 24 hours.

All cases in which the temperature and the pain continue should be drained and thoroughly irrigated with a 2% silver nitrate solution.

The surgical treatment includes the removal of any obstruction to the free escape of urine from the bladder, relief of the cystitis, the removal of renal calculi, and the evacuation of collections of pus in the kidney, nephrotomy and, under certain conditions, nephrectomy, or removal of the kidney itself.

In pyelitis of gonorrheal origin and in all acute cases which after a short time begin to show improvement, the ureter should be catheterized and the pelvis washed with a 3% boric acid solution or a 1 to 2% solution nitrate silver. The indications for surgical operation are intermittent pyuria, with fever during the intermissions, and septicemia even though the pus constantly escapes through the ureter. The operation depends upon the extent of destructive process in the kidney and whether one or both kidneys are affected.

If one kidney alone is infiltrated and full of abscesses, nephrotomy may be done and the pus evacuated. It often happens that the patient's condition improves and the remaining part of the kidney can be left in place to be of some use as an eliminative organ.

In many cases the kidney structure has been destroyed and removal is indicated several days after the pus has been evacuated. It is always better to let a few days elapse before the removal of the kidney after it has been drained, except in tubercular pyelitis, and in this condition it should be entirely removed at once. Where both kidneys are affected, nephrectomy is out of the question and, in feeble old men with a stricture or enlarged prostate, no operation can be done which holds much prospect of recovery. If the patient is in good general condition, evacuation of pus by incision may relieve the septic condition and, if the kidneys are not too badly diseased, they may function enough to maintain life a little longer.

I have under treatment now a man who was thrown from a railroad train in a wreck and landed face forward in a lot of slag by the side of the road. He was badly lacerated from chest to knees, penis being cut to pieces.

When it finally healed, the skin was grown tight down to the meatus and the meatus was too small to get a knitting needle in. He came to me about July 15, complaining of pains in the lumbar region. Upon examination I found the urine loaded with ropy pus and some blood. He was given urotropin, 7½ grs., with Fleet's phospho-soda three times daily. The blood disappeared in a few days and the pus became much thinner. Not being able to introduce a cystoscope on account of the small meatus, I insisted on doing a meatotomy which he refused at that time.

In addition to the above treatment, I gave him intravenously endomethylenamin one ampoule, every three days for twelve doses and noticed the urine cleared considerably. All pain has disappeared and now he has decided to let me cut this scar tissue and make a large meatus and I hope in this way to start a free drainage. The urine now is passed in a very small stream and by straining it takes him about ten minutes to empty his bladder.

400 East Franklin Street.

VESICAL DIVERTICULUM, WITH REPORT OF FOUR CASES.*

By S. BEVERLY CARY, M. D., Roanoke, Virginia.

Vesical diverticula are commonly classified as congenital and acquired. Of the two, the acquired is probably more common and occurs as the result of long-continued overdistention of a bladder which has some obstruction to its outlet, such as hypertrophied prostate and stricture.

We also see this condition in trabeculated bladders of tabetics. A diverticulum is such an important sign in this type of cord lesion that we immediately suspect its presence upon examination of a markedly trabeculated bladder which contains a large amount of residual urine, with no obstruction to its outlet. The congenital diverticulum exists from birth and is an anomaly of development due to an embryological defect. The size varies considerably; they may be small or the capacity a quart or more. The size is often increased when there is an obstruction to the bladder outlet; therefore, it is difficult to determine in a given case whether we are dealing with the congenital or acquired form. It has been the common custom to report all diverticula as congenital

when there is no obstruction to the bladder outlet and the sac contains muscular walls, and as acquired when the muscular layer is absent and associated with definite obstruction. However, the clinical differentiation between the two types of diverticulum is most difficult and in the majority of cases cannot be accurately made. The authorities vary widely in their opinion as to the etiology; some writers believe that all diverticula are acquired, while others are inclined to feel that the great majority are congenital in origin. The occurrence of both types is much more frequent in the male than female; the reasons for this are obvious. An analysis of the four cases which have recently come under the writer's observation would lead us to logically conclude that both etiological factors may enter into their make-up. Two of these cases presented no evidence of vesical trabeculation or obstruction, while in the other two there was definite obstruction and trabeculation. The number varies in either type and as a rule they occupy the lateral walls of the bladder and are to the side of the ureteral orifice, and occasionally contain the mouth of the ureter.

The symptoms are often obscure and many of them never provoke trouble, their discovery only being made through a routine cystoscopic examination. Probably the most characteristic symptom of the uninfected pouch is where after a free evacuation of the bladder there occurs in a short period a subsequent call to urinate with a second and almost equal amount of urine being passed. When infection takes place, the symptoms are those of cystitis, and a positive and satisfactory diagnosis can only be made by a cystoscopic examination.

Treatment is required when the diverticulum produces symptoms due to stagnation and diverticulitis, when it presses on the ureter and affects the function of the kidney, or when it contains a stone or new growth. In those who are poor operative risks, and there are no complications such as a stone or a pus kidney produced by pressure of the diverticulum, the best line of treatment is to lavage the bladder at regular intervals, also catheterize and wash out the diverticulum. The latter is accomplished with the ordinary catheterizing or operating cystoscope by means of a large ureteral catheter being passed into the pouch. After the mucus and pus are cleared out so far as possible, argyrol or mercurochrome is instilled and allowed to remain. In many cases

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of diverticulitis this treatment proves to be curative. Every case should be given palliative treatment for a reasonable period, as it not only often offers complete relief of symptoms, but is a most excellent preparatory treatment for an operation. In selected cases of diverticulitis with strongly alkaline urine, bulgarian bacilli emulsion has been used with success. One case in my series did well on this treatment. Before resorting to surgery it is important to know the general state of health of the individual, also to know the condition of the bladder and kidneys, as well as to determine if possible the presence of a new growth or whether it is a case of simple diverticulitis.

The various methods of operative treatment are:

1. Removal of complications.
2. Enlarging the orifice of the diverticulum for the purpose of securing better drainage.
3. Plastic surgery.
4. Excision of the mucous lining of the sac with suture of the walls of the orifice.
5. Extirpation and transplanting the ureter, should it open directly into the sac.

CASE 1. W. G. S. Male, aged 59, machinist. Presented himself for examination May 24, 1917, complaining of frequency of urination. Stone was removed from bladder five years ago. At present there is a constant desire to urinate, act accompanied by tenesmus and burning. Voids from eight to ten times a night. Considerable amount of blood is passed and urine has a very offensive odor.

Urological examinations May 25, 1917. Very slight enlargement of the prostate, two ounces of residual urine. Bladder capacity thirteen and a half ounces. Urine strongly alkaline and contained a quantity of pus and mucus. Pure culture of staphylococci.

Cystoscope introduced without difficulty, the bladder was found to be moderately trabeculated and intensely inflamed with flakes of pus clinging to its walls. Several dark areas were detected which appeared to be openings of diverticula. May 26, 1917, bladder was distended with iodide of silver and radiographed. Picture showed two pouches about the size of a guinea egg coming off from the lateral walls. The smaller pouches did not show up on the plates.

DIAGNOSIS: Moderate enlargement of the

prostate; diverticulitis and cystitis. Staphylococcal infection.

TREATMENT: Irrigations of boric acid and silver nitrate for a period of about two weeks, with no result. Then the following treatment was carried out: saline irrigations to clear the bladder of mucus and pus, followed by injecting an emulsion of bulgarian bacilli. This procedure was carried out every day for ten days, and every other day for two weeks. Patient reported great relief and was fairly comfortable until his return June 9, 1919. The bulgarian treatment has been carried out at intervals since. Recently he reported that he is getting along comfortably. The benefit derived from the bulgarian bacilli is undoubtedly due to establishing an acid culture which counteracts the irritating alkaline decomposition. The principle is the same as that brought out by Caulk in the treatment of encrusted cystitis.

CASE 2. E. L. L. Male, aged 63, banker. Presented himself for examination April 6, 1919, complaining of frequency of urination and hematuria. First noticed blood in urine two months ago, which lasted about one week. Several weeks previous to this there was a slight frequency in desire to urinate; however, he was disturbed only once or twice during the night. For the past two weeks the hematuria has been constant and frequency of urination more pronounced. Previous treatment consisted of weak silver nitrate irrigations and internal medication.

Urological examination: Prostate and urethra negative. Three ounces of residual urine. Bladder capacity eleven ounces. Urine contained a large quantity of blood and numerous pus cells and bacteria of various kinds.

Cystoscopic examination revealed a highly congested bladder, especially marked of the trigone, prostate and vesical neck. A dark area about the size of a dime was detected about one-half an inch above and to the left of the ureteral opening, this picture being typical of a diverticular opening. A ureteral catheter was passed into it for a distance of two inches before meeting with resistance. Both ureters were catheterized: the left was somewhat difficult to enter on account of the distorted angle of the trigone. Kidney specimens negative except for an occasional leukocyte.

X-ray examinations negative. Wasser, mann negative.

DIAGNOSIS: Cystitis and diverticulitis. Mixed infection.

TREATMENT consisted of bladder irrigations and flushing the pouch with boric acid solution followed by 10 per cent. argyrol. This treatment was carried out at intervals with good results in regard to the infection, but the intermittent hematuria continued. Cystoscopic examination several months later revealed a smooth rounded mass, which appeared to be a new growth, presenting itself at the diverticulum opening. A suprapubic cystotomy was carried out and a smooth diverticulum opening, which would easily admit the index finger, was found. The interior of the sac contained an extensive tumor mass with indurated base, which practically filled the 100 cc. capacity sac. The sac proper extended upward and to the right for some distance beyond the median line, the posterior bladder wall practically acting as a septum. A radical operation was not carried out for obvious reasons. The pathological examination of a section removed showed a rather active carcinoma.

CASE 3. A. G. D. Male, aged 71, merchant. Presented himself for examination January 23, 1920, complaining of frequency and straining on urination which, he stated, first gave him trouble two years ago, but has been gradually growing worse for the past eight months. At present he has to get up eight or ten times a night. The stream is difficult to start and has no force. Urine cloudy, all three glasses. No enlargement of the prostate per rectum. No. 18 F. sound was passed with difficulty on account of an obstruction at the peno-scrotal junction and in the posterior urethra. Sounds were passed at intervals until the urethra dilated to No. 26 F.

Cystoscopic examination revealed a slight vesical enlargement of the prostate and an intensely inflamed bladder, which was moderately trabeculated, and a diverticulum opening was located about one-half an inch to the right and one-fourth of an inch above the left ureteral meatus. A small opening was located in the same position on the right. A ureteral catheter was passed into the left opening and coiled several times. X-ray pictures were made with catheter in place before and after injection with sodium bromide solution.

DIAGNOSIS: Moderate vesical enlargement of the prostate; stricture of the anterior ure-

thra; cystitis and diverticulitis. Colon bacilli infection.

TREATMENT in this case consisted of appropriate attention to the stricture, and vesical diverticulum lavages, which gave temporary relief. Had it not been for the general condition of the patient a radical operation would have been carried out.

CASE 4. E. C. F. Male, aged 63, machinist. Presented himself for examination November 19, 1920, complaining of pain and frequent urination which first gave him trouble three weeks ago. Voids four or five times at night and about every half an hour during the day, act accompanied by intense burning and tenesmus. No blood or gravel. Examination revealed a slight discharge from the urethral meatus which proved to be free from gonococci. Cloudy urine, all three glasses. Prostate per rectum normal. X-ray examination negative.

No. 24 F. cystoscope was introduced without difficulty. The bladder mucosa was found to be intensely inflamed and a diverticulum opening about the size of a three-cent piece was located immediately posterior to the base of the trigone and about the median line of the bladder. About one-half an inch from this another small opening was detected. A ureteral catheter was introduced into the large opening and coiled several times. X-ray plates were made before and after injection with sodium bromide solution. The first showed the catheter coiled in the shape of a ring, the size of a half dollar. Second plate, which was taken after the introduction of 20 cc. of sodium bromide solution, showed a shadow about the size of an English walnut.

DIAGNOSIS: Cystitis and diverticulitis. Colon bacilli infection.

TREATMENT consisted of vesical and diverticulum lavages for a period of one month. The symptoms promptly subsided and the urine has remained free from pus and bacteria.

CONCLUSIONS: *First*, diverticula may be congenital or acquired in origin. *Second*, their occurrence is not so rare as generally believed. *Third*, In the absence of complications, simple diverticulitis should be treated by the expectant plan for a reasonable period, as many of these cases will entirely clear up. Even though we do not get the desired results the patient is certainly in a better condition for any operative procedure selected.

MacBain Building.

HEPATIC FUNCTION*

By WARREN T. VAUGHAN, M. D., Richmond, Va.

The liver, the largest organ in the human body, possesses a large number and a considerable variety of functions. No other organ probably plays so important a role in the metabolism of such diverse substances as does the liver. Liver cells remove substances from the circulating blood, and, after transforming them chemically and biologically, they either return the changed substances immediately to the blood, or excrete them with the bile, or store them for a longer or shorter period of time.

These cells secrete bile, form and hydrolyze glycogen, store fat, form urea from ammonia, serve as a temporary storehouse for iron, produce fibrinogen, and detoxicate what poisonous substances customarily find their way from the intestines into the portal circulation. These functions we already know of. Presumably there are more. Dissociated jaundice in which bile pigment is shunted into the blood while the bile salts pass, as normally, into the intestines is an excellent example of the very delicate functional adjustment of the liver cells.

Cirrhosis of the liver is a chronically progressive condition which is usually accompanied by recognizable changes in the size of the organ. This condition is less frequently seen than is chronic nephritis and produces as a rule less dramatic results. Studies of hepatic function have seemed, therefore, to be of less importance than studies of kidney function. On the contrary it is probable that the liver cells become deranged in one way or another more frequently than is the case with the renal epithelium. There is some evidence suggesting a greater tendency on the part of the hepatic parenchyma to return to normal. Apparently also the cells may function perfectly in certain of their tasks while being unable to successfully carry out others. It is not certain that this indicates impairment of certain groups of cells as is the case in certain other organs, for we have been unable to discover as many clearly differentiated types of hepatic cells as there are types of hepatic function.

It is probably true that occasionally a liver which has apparently been functioning normally will, when called upon for some unusual or extreme task, fail in the performance of its work. The surgeon, probably more fre-

quently than the internist, meets with functional failure of the hepatic cells. There is a tendency to smile at the surgeon as we have sometimes smiled at the family physician who speaks of "sluggish liver" and ascribes many of the patient's complaints to hepatic insufficiency. It is more than probable that during an operation under general anesthesia the liver in particular is called upon to do an unusual amount of work. The rapid and usually progressive collapse which occasionally follows extensive operations is often due, in the opinion of the surgeon, to inability of the liver to properly functionate. The symptoms are not entirely those of shock and although they appear more frequently in individuals in whom the operation is on some portion of the biliary tract, yet they do occasionally follow operations upon other organs. Frequently, especially in terminal cases, a slight icterus appears in the conjunctivae.

Crile emphasizes the fact that the important problems in present day abdominal surgery are to be found in the so-called "bad-risk" cases, individuals in whom the margin of safety has been reduced by starvation or infection, by the toxins of cancer, by auto-intoxication, etc. He has emphasized the importance of exhaustion in predisposing to bad risks, and finds that in all types of experimental exhaustion the cells of the liver show pathologic changes, such as diminished power of differential staining, edema, and increased electrical conductivity. He considers a very close relationship to exist between the activity of the liver cells and those of the brain and the adrenal gland. He believes that whatever tends to stimulate body metabolism should be avoided, if possible, preliminary to operation, particularly in order to lessen the burden on the liver. Thus, excitement and worry are to be avoided. He also believes that whatever interferes with the internal respiration of the liver should be removed if possible. Thus, cases suffering from asthma, edema, pleurisy, tuberculosis, heart disease, etc., are relatively poorer operative risks. The administration of a general anesthetic produces, according to Crile, an increased hydrogen ion concentration in the blood and interferes with the internal respiration. He believes that all of these factors are correlated with the ability or inability of the liver to properly perform its function.

Most evidence so far advanced regarding hepatic insufficiency following operation has

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been entirely theoretical and not at all conclusive. If such a condition does exist, it is highly important that we evolve some means of studying the function of the liver.

Mann has studied loss of liver function in dogs, produced by complete removal of the organ. Quite uniform symptoms follow such an operation. The immediate recovery did not differ in symptomatology or in duration from that following other operations; after four to eight hours, however, the animal rapidly sickened, and died. Before the appearance of these final symptoms the condition was apparently similar to that of any other animal following any other operation involving a like period of time and an equal amount of trauma. The onset of the final period was sudden and first evidenced by muscular weakness. Progressive muscular relaxation was followed by localized twitchings, and finally general convulsions and death. No fever accompanied these changes. Blood creatinin and urea determinations made both before the operation and during coma gave normal values. The blood sugar, on the other hand, decreased to less than half its normal value. Mann notes the similarity between symptoms following removal of the liver and those following total loss of function of the adrenal glands.

Fortunately, we are rarely if ever called upon to treat clinical conditions caused by total suppression of hepatic function. It is in further study of derangement of specialized functions of the organ that we may hope for improvement in our present knowledge and methods.

A rather extensive investigation has been carried out regarding the relationship between hepatic function and sugar tolerance. One of the late reports on the subject is by Jacobson. He found that after an Eck fistula operation, experimental animals developed an extremely low tolerance for laevulose. Glucose tolerance is but slightly modified after such an operation. The production of alimentary laevuluria is regarded as evidence of hepatic insufficiency.

Galactose has similarly been used as a test of liver function. Alimentary galactosuria has been looked for following the ingestion of forty grams of chemically pure galactose. Sisson believes that patients with icterus catarrhalis have an intolerance to galactose.

Attempts to quantitate hepatic function by means of the ingestion of certain dyes simi-

larly to the dye tests for renal function have so far been unsatisfactory. The results, however, are suggestive. The phenoltetrachlorophthalein test has been rather extensively used. There are some disadvantages such as the difficulty of collecting entire specimens of feces, the discomfort caused the patient by catharsis, and the wideness of range in per cent. of excretion in individuals with apparently normal livers. According to Goodpasture, the phenoltetrachlorophthalein test is fairly accurate in acute liver injuries but is entirely unreliable in chronic disease such as cirrhosis of the liver.

The liver is a normal and important site of fibrinogen formation. It has been shown that in severe acute injuries to this organ the fibrinogen content of the blood is reduced. During recovery from experimental liver injury the blood fibrinogen content is increased above normal.

Goodpasture described, several years ago, a qualitative test which appears to be thoroughly reliable in cirrhosis of the liver but which for some reason is not widely known and has not come into general use. He reported four cases of atrophic hepatic cirrhosis in each of which sterile specimens of venous blood clotted within a normal length of time; but in which the clot redissolved completely within a few hours at body temperature. He designated this phenomenon fibrinolysis. The clotted blood from normal individuals will usually stay for several days at body temperature without redissolving. The fibrinolysis test for cirrhosis of the liver, particularly for atrophic cirrhosis, appears to be quite constantly positive. We have found it to be so in all such cases in which we have had occasion to perform the test.

Rowntree, Marshall and Chesney have summarized the recent knowledge regarding liver function in part as follows: Under clinical conditions a phenoltetrachlorophthalein output of less than thirty per cent. with the appearance of the dye in the urine is of unquestionable significance. Low fibrinogen values are frequently but inconstantly encountered in cirrhosis. The determination of the lipolytic activity of the blood plasma is of little significance. Goodpasture's fibrinolysis test when positive seems to be of undoubted diagnostic importance, indicating cirrhosis of the liver. While theoretically the sugar tests, particularly the laevulose and galactose tests, should give reliable information in functional derangement of the liver, practical experience

shows that the results are not trustworthy. It is probable that in the metabolism of any kind of sugar too many other organs besides the liver play a part.

The fact that the liver is the chief urea forming organ of the body suggests that a study of the nitrogen partition of the blood might give information of value. There is no constant change in the percentage of blood urea nitrogen, but the amino-acid nitrogen has been comparatively high in a large proportion of clinical cases. The partition of the urinary nitrogen sometimes gives suggestive information. The ammonia nitrogen and the amino-acid nitrogen was definitely increased in most of the cases studied by Rowntree and his associates, particularly in cirrhosis.

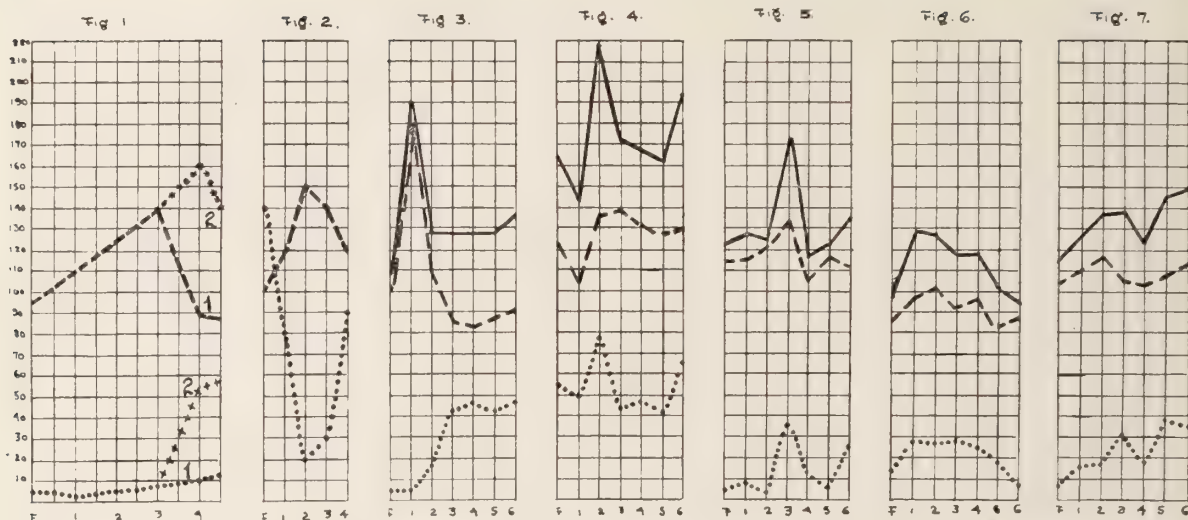
Any practicable test for liver function must involve a minimum of discomfort to the patient and a minimum of time in its determination. Kahn has more nearly approximated this requirement in a recent preliminary report in which he described the determination of phenoltetrachlorophthalein elimination by the liver by means of collecting the excreted dye through the duodenal tube. The appearance time in this method of examination may prove to have considerable value. But even here the necessity for passing the duodenal tube will in some cases constitute a draw-back.

Quite recently Cammidge, Forsyth and Howard have made a further contribution to the study of hepatic function. A certain quantity of sugar is normally present in circulating blood. Its amount is determined after removing the blood proteins. If this protein free filtrate is hydrolyzed with heat and hydrochloric acid—a procedure which would convert starches, dextrins and the higher polysaccharides into glucose—there results little or no increase in the amount of sugar. Therefore, in normal blood there is little or no higher sugar compound capable of producing glucose on hydrolysis (Charts 1, 4 and 6). In diseases of the liver or pancreas, however, such substances do apparently exist in the blood. The determination of blood sugar after hydrolysis gives considerably higher value than without hydrolysis. More sugar has been formed. Cammidge and his co-workers choose to call the difference between the ordinary sugar value and the higher value after hydrolysis, the "difference value" of the blood. Observations on normal blood have shown that the difference value is very small and is not

appreciably influenced by food or by the nature of the diet. In cases of pancreatic disease the difference value is high. This is particularly true in the fasting patient. If a patient with pancreatic disease is absorbing food, the blood sugar rises. The "difference value", however, falls. In other words, the abnormal substance tends to disappear during the digestion and absorption of food. As the blood sugar falls to normal, after digestion, the difference value again rises. (Chart 2.) This inverse relationship appears to be characteristic of disturbances of pancreatic function. The nature of the food seems to exert little influence.

The investigators believe that in pancreatic disease there is present in the blood an abnormal substance which on hydrolysis becomes changed into sugar. This substance appears to be derived chiefly from the glycogen stores of the liver and is an intermediate product, probably a dextrin, formed in the conversion of glycogen to sugar. The liver contains a starch-splitting ferment by whose activity the glycogen is broken down. The pancreas, probably through its internal secretion, exerts a restraining influence on this ferment. Deficiency in the secretion from the pancreas gives greater liberty of action on the part of the glycolytic ferment, and results in the formation of the intermediate product. Stimulation of the pancreas by digestion causes that organ to pour forth the hormone in greater abundance so that the inhibitory action on the liver ferment temporarily approaches more nearly normal. The difference value falls. With lessening of pancreatic activity, after digestion, the difference value again rises to its abnormal level.

According to this theory both liver and pancreas play a part in the determination of the difference value. In hepatic derangements, the difference value curve differs from that described in disease of the pancreas. During fasting, it is abnormally high in pancreatic disease, while in hepatic insufficiency it is within normal limits at this time. Here again the blood sugar rises after a meal, and after about three hours gradually falls to the normal level. The difference value rises likewise, but continues to increase for several hours independent of the later fall in sugar concentrations, until a level which may be ten or twelve times the highest normal limit is reached. Sometimes the rise is rapid and reaches its



Broken lines indicate the blood sugar values obtained. Full lines indicate the blood sugar value after hydrolysis. Dotted lines indicate the "difference value", as described in text. In figures 1 and 2 the hydrolysis value is not indicated, but the difference value, which is obtained as the difference between the original blood sugar and the hydrolysis blood sugar value, is indicated.

Fig. 1. Normal curves, first, after test breakfast, and second, after a test breakfast and the additional administration of glucose two hours later.
 Fig. 2. Pancreatic type of difference value curve.
 Fig. 3. Pick's disease, with hepatic cirrhosis.
 Fig. 4. Normal liver.
 Fig. 5. Carcinoma of liver.
 Fig. 6. Chronic passive congestion of liver.
 Fig. 7. Carcinoma of head of pancreas, with obstruction of common bile duct.

maximum within four hours after a meal, while at other times it requires as long as seven or eight hours. There is no constant relationship to the blood sugar, such as was found in pancreatic disease. Urine curves show similar changes.

In disease of the liver, there is little or no abnormal dextrin in the blood of a fasting individual, but, after a meal, it appears and continues to increase in amount for several hours. Later, it gradually disappears. In pancreatic disease the substances disappear during digestion while in liver disease this is when they do appear. The return to the initial level is more rapid in the former condition and occurs synchronously with the return of sugar values to normal. In liver disease the return to the original level is prolonged and does not synchronize with the sugar curve.

Cambridge and his co-workers suggest that the hepatic type of curve is due to the passage through the liver and into the systemic blood of dextrins derived from absorbed food, which the damaged liver has been unable to completely remove from the portal circulation. However, in experimental animals in which the liver has been damaged by hydrazine, there is sometimes an increase in difference value in

the blood not accompanied by a similar increase in the urine. In this particular instance the dextrin circulating in the blood appears to be non-dialyzable, and thereby differs from that appearing after the ingestion of food. Probably this phenomenon is due to diminution or absence of the amylolytic ferment supposed to be normally present in the liver. Glycogen liberated during the breakdown of liver tissue is not further broken down because the starch splitting ferment is insufficient or absent. Thus dextrin-like bodies derived from the glycogen of the liver may be a contributing factor in the production of the raised difference value under certain circumstances.

We assume from Cambridge's report that the non-dialyzable dextrin is usually only observed in cases where there is acute extensive injury to the liver parenchyma. It depends for its existence on rapid extensive damage to the liver cells.

The work of Cambridge and his associates is worthy of careful study. In it is suggested a new method of observation of hepatic and pancreatic function. There are certain obvious disadvantages and likewise some very distinct advantages to the method. If found to be practicable it will be of advantage that the

work can be done on the blood or urine alone and that unsatisfactory feces collections, etc., are eliminated. If the curves are found to be characteristic, they should have as much value as the colloidal gold curves in the diagnosis of various cerebrospinal affections. The chief disadvantage, and one which may later be eliminated, is the fact that the substances causing the reaction are as yet hypothetical, and that the explanation of the different types of curves obtained depends for its accuracy upon the correctness of the author's hypothesis.

We have had occasion to employ the difference value test in a number of instances, and, so far as our work has taken us, we are able to corroborate the preceding findings. Chart 3 is from a patient suffering with Pick's disease with its concomitant hepatic cirrhosis and ascites. The curve is typically hepatic in type.

Chart 4 is for an individual suffering from hemorrhoids and whose liver is normal so far as can be ascertained from the subjective symptoms and general examination. It will be noted that the difference value curve in this case is not a flat line as in Chart 1. Chart 1 is from Cammidge's report. In it the No. 1 lines indicate dextrose and difference value curves after a test breakfast. If, two hours after the test meal, glucose be administered in addition, the subsequent curves will follow the No. 2 lines, and the difference value will rise, similarly to Chart 4. Thus, the food eaten modifies the type of curve, even in the normal.

Cammidge has not designated the articles used in his test breakfast and we have, therefore, evolved a meal of our own, consisting of two tablespoonfuls of well cooked oatmeal gruel, two slices of toast, coffee, sugar and cream. This diet was selected on account of its high dextrin content. We are now investigating the difference between Cammidge's normal curves and our own, and in the meantime, are assuming that the cause is due to difference in the test meals. Ours is a distinctive type of curve, the difference value following the glucose curve, instead of being in inverse relationship as in the pancreatic type, or unrelated as in the hepatic type.

Chart 5 again conforms to our normal curve. It represents a patient with general carcinoma with involvement of the liver. Presumably those liver cells not invaded are functioning normally. There was no jaundice.

Chart 6 is for a cardiac case with decompensation,

congestion of the liver and ascites. The interpretation of the lengthening of this otherwise normal curve is in retarded absorption through the edematous intestinal mucosa.

In Chart 7 the curve appears to follow the normal at first, but during the last two periods the hydrolysis value again increases. In fact, even by the second hour one sees a distinct upward trend conforming more to Chart 3 than to Chart 4 or 5. This patient was suffering from carcinoma of the head of the pancreas with obstruction of the common bile duct and intense jaundice, but without metastasis to the liver. Knowledge concerning the difference value is still too limited to enable us to explain these two latter curves, but their general character gives one the impression of a liver which is performing its function fairly satisfactorily at first, but which towards the end finds the task too difficult.

If this be the true explanation, this latter type of curve will be characteristic of the earlier or milder stages of hepatic dysfunction and will eventually become one of the most important types to the clinician.

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THE ADVANTAGES AND LIMITATIONS OF SKIN TESTS FOR PROTEIN SENSITIZATION IN BRONCHIAL ASTHMA, HAY FEVER AND ALLIED CONDITIONS.*

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During the past decade the question of protein sensitization in the production of disease has been widely studied from both the laboratory and clinical standpoint, and from these extensive investigations there have been derived

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certain important facts which constitute a valuable part of the progress of that period. It is now generally recognized that hypersusceptibility to various protein substances forms the basis of a number of symptom complexes formerly classed as separate diseases of obscure etiology, and that by means of fairly accurate tests the offending protein may often be determined, thereby revealing a means of specific and effective treatment. The literature accumulated thus far has dealt chiefly with bronchial asthma and hay fever, but it is evident that urticaria, eczema and angio-neurotic edema may occur from the same cause and there seems reason to believe that various gastro-intestinal disturbances, as well as certain cases of migraine, epilepsy and paroxysmal hemoglobinuria may have the same etiological basis.

Since Meltzer¹ first suggested the anaphylactic explanation of bronchial asthma, this and several other clinical phenomena have been broadly grouped as manifestations of anaphylaxis and have been studied chiefly from this standpoint. While it is impossible to prove or disprove the assumption that the manifestations of artificial sensitization in animals and the symptoms arising from natural hypersusceptibility in man are due to identically the same process, the points of similarity are striking, and the analogy has served as a valuable guide in the study of the more obscure condition.

That hypersusceptibility in man may be responsible for certain symptoms seems to be proven clinically. Seasonal hay fever due to the pollen of some plant gives a striking example. Outside of the pollen season the patient is entirely free from symptoms, yet sneezing can be produced at any season by inhalation of the pollen or by injecting it into the circulation. Horse asthma furnishes another common illustration of the same process by which definite manifestations promptly follow the contact of a susceptible individual with the substance to which he is sensitive, and numerous other well-known instances might be cited. Of greater significance, however, is the fact that the vast majority of patients with seasonal hay fever and asthma due to the emanations from horses show not only the symptoms referable to the respiratory tract, but, when small quantities of the substances to which they are sensitive are brought

in contact with their mucous membranes, or rubbed or injected into their skins, a characteristic reaction is produced consisting of a local erythema or urticarial wheal. Furthermore, when naturally sensitive individuals are injected repeatedly with small quantities of the protein to which they are sensitive, their symptoms are often relieved. The basis, therefore, of our present knowledge of hypersusceptibility as a cause of disease consists of these three facts: the occurrence of symptoms after contact with certain substances, either by inhalation, ingestion or direct introduction into the circulation; the skin reactions produced by the same substances when locally applied; and the relief of symptoms by carefully avoiding the causative agent or by injecting it in small quantities until a tolerance is acquired.

In the study of a case in which idiosyncrasy or hypersusceptibility is suspected, the determination of the substance to which the individual is sensitive is of prime interest. Valuable suggestions may be derived from the family and personal history in practically all cases and these, together with a careful examination of the patient, should never be omitted. In the majority of instances, however, skin tests are essential, and the reactions obtained and properly interpreted furnish the most reliable information available for directing successful treatment.

In selecting proteins for testing, one cannot be guided by theoretical considerations alone. It is known that the protein element in various substances is responsible for sensitization, and these when isolated are often closely related or identical chemically. The protein molecule is composed of smaller molecules which are separated by the action of either mineral acids, alkalis or enzymes, and the possible combinations of the amino-acids thus liberated are almost incalculable². Specificity, therefore, cannot be explained purely on chemical grounds, but of necessity it must be concluded that the reactions obtained are group reactions and not caused by distinct chemical compounds³. Clinical experience, however, has indicated what groups of proteins commonly cause sensitization, and until more is known of the exact nature of the process, this experience must serve as a guide both for applying tests and for their interpretation.

From the now voluminous literature

which includes a summary of the results of skin tests obtained by various workers, one gets a variety of impressions, depending upon the particular aspect of the subject dealt with by the individual author. It is agreed generally that the tests are of great value and the percentages of positives in the same class of patients is surprisingly uniform. The actual figures given, however, are significant only in so far as they indicate the general usefulness of the tests.

In attempting an analysis of my own cases, I was particularly impressed with the difficulty of any satisfactory clinical classification. Bronchial asthma and hay fever were naturally the prominent manifestations in the majority of patients inasmuch as these conditions have been the first to suggest sensitization. However, where other symptoms are kept in mind and routine inquiry is made regarding them, it is surprising how frequently combinations of two or more are found to exist in the same person, particularly of asthma, hay fever, urticaria, angio-neurotic edema or eczema. It would seem, therefore, that these syndromes, instead of being looked upon as clinical entities, might be regarded as symptoms or expressions of an underlying sensitization to foreign protein.

From a review of the records of 100 patients on whom I have made skin tests, the deductions as to the frequency with which positive reactions occur are approximately those published by Walker,⁴ Rackemann⁵, Cooke,⁶ Gottlieb⁷ and others for asthma and hay fever. There were 70 cases showing typical bronchial asthma, but 22 of these gave evidence in addition of one or more of the other conditions. Of these 70 cases, 33 or 47% showed positive skin tests to one or more proteins. Seasonal hay fever was the predominating complaint in 18 cases, and 16 of these gave positive skin tests, but 9 showed also one or more of the other syndromes. The remainder of the cases consisted of urticaria, angio-neurotic edema, eczema, perennial hay fever, or combinations of these. Ten cases in which urticaria was the chief complaint showed positive tests in 5, while of 4 cases of perennial hay fever 2 gave positive reactions to proteins.

All of these patients were thoroughly studied. Histories included data on possible hereditary idiosyncrasy, habits, environment and diet, with description of attacks, particu-

larly as to time, season, duration and method of relief. Complete physical examinations, with routine blood smear, Wassermann and urinalysis, were made and special examinations of the nose, throat and sinuses done in all cases involving the respiratory tract. The information gained from these investigations was often valuable for selecting tests, but rarely if ever could a satisfactory conclusion be arrived at without skin tests. A family predisposition is suggestive of hypersusceptibility, but of no practical value in diagnosis, as members of the same family show different manifestations of sensitization. Statements as to time of attacks, season, frequency, duration etc., are of great value as they not infrequently indicate that the cause belongs to a certain group of proteins. Local infections have received much attention, particularly in asthma, and should be thoroughly treated. However, I recall several instances in which patients with obvious sinus or tonsillar disease proved sensitive to outside proteins and were relieved by avoiding contact with them. In two of my cases of asthma in this series the Wassermann test was positive, but I have no reason to believe that this in any way influenced the symptoms.

The results of treatment in the sensitive cases were variable. As a rule, where the protein was definitely determined and the patient capable of intelligent and thorough co-operation, the results have been good. As an example the following case is cited: A child of seven had suffered since her second year from hard attacks of asthma occurring at any time of day or night, often requiring a hypodermic of morphine for relief. Attacks sometimes numbered 4 or 5 a day, and the longest period of freedom had been five weeks. The tonsils had been removed with apparently no effect on asthma. Examination was negative except for polypoid degeneration of middle turbinates. Skin tests for wheat oats and rye were positive. Cereals were carefully excluded from the diet and within a few days the attacks ceased. Instructions have been carefully followed by an intelligent and interested mother for more than a year, and the patient has remained practically free from symptoms. When she was examined last, however, the skin tests for cereals were still positive, though not to the same degree as previously.

In a number of instances skin tests revealed multiple sensitization and it was difficult to

determine which protein was giving trouble. This question was finally decided upon the degree of sensitivity revealed by the individual tests and by the patient's possibilities as indicated by his history and environment. Multiple sensitization is frequently encountered, and adds to the difficulty of diagnosis, but the fact of its presence by no means precludes successful treatment.⁸

As has often been observed by others, my cases showed that the earlier in life the symptoms begin the more apt is the patient to prove sensitive to some known protein. Coke⁹ states that it is possible by skin tests to classify 50% of asthmatics and 90% of asthmatic children.

In the process of investigating the symptoms commonly associated with hypersusceptibility, one is frequently impressed with the possibility of a still wider application of the study. For instance, a patient in this series who had suffered off and on for years from attacks of mucous colitis suddenly developed asthma. Skin tests showed a positive reaction to milk, and subsequent experience indicated that the mucous colitis and asthma were due to the same cause.

As a routine, I have used the cutaneous method of testing as advised by Walker and have found it satisfactory. Where reactions were doubtful to any special protein, the test was repeated and, if possible, checked by the intradermal method which consists of injecting solutions of the protein of varying strength between the layers of the skin. This method is extremely delicate for routine use and is considered by Walker¹⁰ to be impracticable and erratic. By Cooke¹¹ it is held to be much more reliable than the cutaneous method.

Having obtained a positive cutaneous reaction to one or more proteins, its significance in the case under study must be carefully weighed. An individual may be sensitive to a number of substances and have symptoms from only one, while one positive test does not always explain the clinical disease. It must be remembered also that normal human beings show a small proportion of positive tests.¹²

It is a somewhat disconcerting fact that after all our elaborate investigations have been carried out there still remains about one-half of our cases, clinically indistinguishable from the positive half, the cause of whose sensitization we are unable to ascertain. At present we lean to the assumption that these indi-

viduals are sensitive to some substance of bacterial origin manufactured within their bodies. Of this we have little or no proof except the good results occasionally observed after the removal of infectious foci and the relief that often follows the use of vaccines. Skin tests with bacteria are not nearly so satisfactory as with other kinds of proteins for the reason that the percentages of positives to common stock organisms is extremely small. Sanford¹³, in 365 tests with the staphylococcus pyogenes aureus and albus, obtained no positive reactions. Caulfield¹⁴ states that on account of the scarcity of positive reactions he has practically abandoned testing with bacteria as a routine. It would seem, therefore, that the role played by bacteria in sensitization is by no means clearly understood, and is a matter for research rather than for dogmatic statement.

SUMMARY: Sensitization or hypersusceptibility to certain protein substances is a condition which may give rise to a variety of clinical manifestations. In deciding to what substances an individual is sensitive, skin tests are essential. Skin tests alone, however, may be misleading, and like every other form of laboratory investigation must be carefully checked by an adequate history and examination of the patient.

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Dr. J. W. Preston, Roanoke:—The whole question of sensitization to foreign proteids and kindred bodies is so broad, so complicated, and has so many ramifications that in the minds of even the best informed workers it is somewhat hazy, but is clearing by degrees to the extent that we now know that they certainly play an important role in phenomena, varying all the way from urticarias, eczemas, intestinal disturbances, hay fever, asthma, and like manifestations, to typical anaphylaxis. There is evidence tending to show that in the same

individual the reaction may vary at different times from one of the above to the other.

Relative to the skin test, it certainly is a wonderful aid in certain cases, but, like many other new things, it possibly has been relied upon to too great an extent, and we are now beginning to find out that these cases fall into certain groups, some of which react and some do not, and a distinct advance will be made when these are clearly differentiated. A most interesting speculation is how far the proteins of focal infections may and do enter into the symptoms of some of these cases, and what the relative relation is between focal infections and say, for instance, ingested or inhaled foreign substances. No discussion of this matter is complete until the possible role played by the various internal secretions has been mentioned, for it is interesting, to say the least, to speculate upon whether or not such secretions be materially influenced by these bodies.

As to the matter of therapy, immunizing by the hypodermic injection of increasing doses of the substance believed to be at fault has certainly given brilliant results in a fair proportion of cases, but the percentage of failures has been greater perhaps than many realize. Certainly, a considerable portion of such failures might with justice be attributed to faulty diagnosis and technique.

While perhaps the progress has not been made in therapy that we would wish, one very material step forward has been accomplished, that is to say, the old idea of urticarias and like conditions being due to "uric acid" which has so long borne the burden has been very definitely disposed of in the class of cases under consideration.

Dr. Warren T. Vaughan, Richmond: Dr. Hutcheson remarked that the cutaneous test for sensitization to bacteria, as a rule, gave negative results. It has been my experience that frequently the bacterial proteins produce no reaction within the usual length of time but, after twelve hours or so, there is a well marked reaction, of a type that warrants further study. Certain it is, that there is such a phenomenon as sensitization to bacteria, whether the skin test is positive or not, as can be readily evidenced by the excellent therapeutic results from the administration of mixed autogenous vaccine in certain selected cases of bronchial asthma.

CHRONIC PANCREATITIS*

By ALEXANDER G. BROWN, JR., A. B., M. D., Richmond, Virginia.

The pancreas secretes an alkaline, thin, limpid fluid, varying from 500 to 800 cc. daily, according to the diet. This secretion passes into the duct of the pancreas, the canal of Wirsung. This duct commences at the tail of the pancreas and receives tributaries from various lobules until it opens in a common orifice with the bile duct into the intestine. This is called the external secretory system in contradistinction to the internal secretion

which arises from the islets in the body of the gland and is taken up by peri-pancreatic lymphatic system.

This external secretion possesses a three-fold digestive power; trypsin, the protein enzyme; amyllopsin, the starch enzyme; and lipase, the fat enzyme. The rate of flow is dependent upon the kind of food taken. The greatest output is obtained after a meal of bread, and the smallest after a meal of meat. The pancreas is thought to possess powers of adaption to the compositions of the food. After a meat diet, the proteolytic ferment is increased over the other ferments; after a fat diet, the lipase is increased over the other ferments.

Chronic pancreatitis, pancreatic calculi alone or with chronic pancreatitis or pancreatic cancer, may diminish or suppress pancreatic secretion. When this takes place to a sufficient degree, symptoms of imperfect or absent pancreatic digestion appear in the intestinal tract. Following this perversion of digestion of fats and proteins, there appears a characteristic looseness of the bowels or diarrhea. The occurrence in a patient of the passage of a number of loose bowel movements, without evidence of blood or mucus or other signs of intestinal inflammation, is rather significant of disease of the pancreas. The stools of a patient with suppressed pancreatic secretion are usually heavy with fat, are light in color; are usually very bulky; are free from mucus or blood. The amount of fat in the stool and the number and size of the stools depend upon the sort and amount of food, as well as the degree of suppression of the pancreatic secretion. In some patients the stools pass as oily substance which on standing hardens into butter like masses; in some, the fat appears as cream-like masses. In the use of Schmidt's diet, which contains a very small amount of waste material but enough fat and rare meat for the purpose of testing the presence of fat or meat fiber in the stools, we have a useful aid in the investigation of cases with loose bowels where the presence of fat is not at once determined upon. This diet should be used for three days before reaching a decision. In this connection, it may be observed that, if doubt exists, the addition of 50 grams of butter or of bacon to the diet may disclose in abundance butter-like masses in the stools, signifying the absence of pancreatic secretion. As much as 73% of the fat intake, as shown by Tileston¹ is lost in the

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stools in patients with obstruction of pancreatic duct. Pratt² reports that in seven cases of obstruction of the pancreatic ducts he found the percentage of fat to range from fifty-three per cent. to seventy-three per cent. Normally the feces contain less than twenty-five per cent. of fat.

In connection with the symptom of loose bowel movements, the similarity of chronic pancreatitis and sprue should be kept in mind. Sprue is a disease of the tropics, showing "a peculiar inflamed superficially ulcerated exceedingly sensitive condition of the tongue and mouth; great wasting and anemia; pale, copious, and often loose, frequent and frothy, fermenting stools very generally by more or less diarrhea, and also by a marked tendency to relapse." While the occurrence of frequent loose and fat-containing stools discloses marked similarity to pancreatic suppression, the pancreatic changes pathologically have not been pointed out except recently by Dr. T. R. Brown,³ who showed that in a case of typical sprue the ferments of the pancreas were absent and that with the administration of pancreatic extract the fat and loose stools were stopped. It is thought, therefore, that in certain cases of sprue, at least, there is a diminution or suppression of the pancreatic function. It is not known that this absence means organic changes in the gland, but the presumption is that such is the case.

REPORT OF CASE.

Mr. E. C. W. Honolulu, admitted March 19, 1921. Age 73, male, Civil State S; nativity, American; occupation, capitalist.

COMPLAINT: "Bad stomach without gastric juice and indigestion." For last five months many loose bowel movements daily; lost weight.

F. H. Does not know anything about family; says he does not think there has ever been any cancer, T. B., or paralysis in any of his folks.

P. H. Patient has always enjoyed excellent health. Diseases of children, exclusive of diphtheria and scarlet fever; no other diseases except sciatica a year ago. No history of serious injury except fracture of three ribs left side. Dysentery in Japan ten years ago.

P. I. For about ten years the patient has

been suffering with indigestion. Just after meals a full sensation comes on and, if he does not get relief, it is followed by severe pain in the epigastrium. Meats and butter seem especially to bring on this trouble; soda relieves it, but the patient feels best on an empty stomach. The patient has been constipated for years until last summer when he passed a large formed stool and since this time diarrhea has been marked. No nausea or vomiting. No hematemesis, no blood in stools unless attended by hemorrhoids. The other day when the doctor was pumping out his stomach he got a small amount of blood back with the contents. In the last two and one-half years he has fallen off about 35 pounds. So much pain has been caused by eating that the patient has often gone hungry rather than suffer the consequences of eating; the appetite has always been good.

He has suffered recently with severe headaches generally over the head; this was attended with constipation and relieved when the bowels were opened. No vertigo. Eyes and ears negative. No sore throat except with colds, teeth are in pretty good condition.

No dyspnea, palpitation, edema, cough, hemoptysis, or night sweats. No nocturia except once a night. No poly- nor oliguria. No dysuria nor hematuria. Gonorrhea with relapses several times. No history of venereal sore. No caffeine; occasional use of alcohol, never regularly or in excessive amounts.

P. E. Patient is a well developed and well nourished white man. Except for a pigmented condition of the dorsal surface of the hands, the skin is normal. The hair is normal for his age. The post cervical and epitrochlear lymphatic glands are neither tender nor enlarged; the thyroid is of normal size.

Head of normal shape and size. Ears normal, mastoids not tender. Eye movements normal; pupils respond well to light and accommodation. Oral cavity is in good condition; the teeth are well preserved though there is much dentistry; the tonsils are negative, and there is no pharyngeal inflammation; the gums are slightly inflamed at places but there is no ulceration.

CHEST. Cardiac impulse visible and palpable under 5th left rib about 4½ inches from the midline. The area of cardiac dullness is markedly enlarged to the left. There are no murmurs, however, and the heart sounds are

(1.) Read Tileston. Trans. Assoc. Am. Phys. 1911-513.

(2.) Pratt, Oxford Press, page 479.

(3.) The Absence of Pancreatic Secretions in Sprue, etc., by T. R. Brown, M. D., A. J. M. S., April, 1921. page 501.

of good tone. The lungs are normal on inspection, palpation, percussion and auscultation.

ABDOMEN. The liver dulness begins at the 5th right rib in the nipple line but does not extend below the costal margin; the liver cannot be palpated. Palpation of the abdomen is negative except for a small area of slight tenderness in the left lower quadrant; no masses whatever can be elicited on palpation. Percussion is negative throughout. Spleen is normal; there is no pain on deep pressure in lower epigastrium.

The extremities are negative. Knee jerk is sluggish on both sides; no ankle clonus, no Bakinski.

GASTRIC ANALYSIS.

Time (in min.)	30	45	60	75	90
HCl	0	0	0	0	
Total	7	6	20	10	Empty

URINALYSIS.

Sp. Gr.	Reaction	Albumin	Sugar	Blood
1023	Acid	Trace	0	+
Many hyaline casts				

BLOOD

Reds, 4,784,000; White 6,000; Hem. 80%; Polys 82%; S. & L. Lym. 14%; Eosin. 2%; Trans. 2%.

Wassermann negative.

Feces negative for ova, parasites, or blood; positive for fats.

Blood pressure March 2, 1921, 128/80; March 19, 1921, 135/65.

Patient had sixty-four movements of the bowels in two weeks' stay in the hospital. In these movements there was a large percentage of fats.

COMMENT: The occurrence of the loose bowel movements, the loss of weight and body strength, the feeling of gastric and intestinal distress demand immediate attention. In this case, with a negative Wassermann and with a report of negative x-ray findings, the condition of the gastric function was rather interesting. The absence of free hydrochloric acid in any of the samples of the digestion of the test meal and the early evacuation of the stomach contents pointed to the stomach function and indicated the use of the hydrochloric acid in rather large doses. Upon the administration of hydrochloric acid with the meals, the first improvement was noted. The diet was the

next step. The food was made free of fat. Pancreatic extract was administered with lactate of calcium. The relief from the symptoms of frequent large oily and fatty bowel movements was marked. The patient's general improvement was immediate; in six weeks, although well advanced in years (73), he traveled across the continent and to Honolulu, with progressive improvement and a gain of 45 pounds.

Stuart Circle Hospital.

THE TREATMENT OF ESOPHAGEAL SPASMS.*

By J. RUSSELL VERBRYCKE, JR., M. D. F. A. C. P.
Washington, D. C.

Up to the present the writer has had the unusual opportunity of treating nearly 250 patients with esophageal spasms of varying degrees, most of which have been of the cardia. From the observation of results secured in this series it is believed that some deductions may be made. Some of the cases were treated before the present methods were employed and so the number who have been treated by mechanical means is somewhat reduced. So also there have been a number in whom some co-existent disease prevented the use of treatment for the spasm which would otherwise have been indicated.

In order to thoroughly understand the indications for treatment it is necessary to briefly review the etiologic factors and the course of the disease, or symptom complex known as cardiospasm, which is a constant or temporary abnormal contraction of the gastro-esophageal sphincter. Spasm of the sphincter occurs at least forty times more frequently than other contractions of the esophagus, so attention will be devoted principally to cardiospasm rather than to these other spasms.

Cardiospasm may be said to be in the first stage when there is a slight obstruction to the entrance of food or liquid into the stomach. The second stage is when food will not always go through and there is regurgitation. In the third stage, food has been retained so long and so often in the lower esophagus that sac formation has occurred from dilatation of the esophagus above the spasm.

In a former paper it was stated that a careful analysis of 100 of our patients showed that

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the main exciting causes fall into four groups, (1) neurotic, (2) reflex from disease elsewhere, as appendix or gall bladder, (3) irritative, as from local esophageal disease, and (4) toxic. In the treatment of cardiospasm, as in the treatment of other pathological conditions, an attempt should be made to remove the cause if possible. Mild or transient cases will generally be relieved by this alone. When a strong and persistent spasm has once become firmly established, however, removal of the cause is not sufficient to effect a cure. Habit has then come into play and the muscle has probably acquired the inherent quality of staying contracted and disobeying the natural law of contrary enervation by which the cardia is supposed to dilate as the rest of the esophagus contracts during the swallowing act. This is illustrated by the following case:

Miss P. J. S., age 24, was examined November 24, 1918, at which time she had had cardiospasm steadily for 5 weeks following an attack of influenza and pneumonia. There had been a slight attack one and a half years before. Nearly all nourishment had been regurgitated and there had been a loss of twenty pounds in the last month. There was occasional slight pain in the appendix region, soreness on walking, and tenderness well localized to the appendix. There was co-existent pylorospasm, as noted under the fluoroscope, and this could be induced by pressure over the appendix so that the assumption would be that the appendix was equally responsible with the toxins of the influenza in producing the spasm.

A moderately diseased appendix was removed and for two weeks she was better after which time the spasm recurred with full severity. The cardia was forcibly dilated with the Plummer water pressure dilator, using ten pounds of pressure. The effect was instantaneous, all symptoms stopping, but there was a recurrence in two weeks and another dilatation was necessary which was followed by perfect and permanent cure.

It is often true that a first or second stage spasm, that is before sac formation has occurred in the esophagus, gives more symptoms than high degree third stage cases, with immense false stomachs in the lower esophagus and with food retention for hours or often for days. These patients who have marked symptoms require other treatment than removal of the exciting cause. It is therefore necessary to treat the individual patient rather than any

particular stage of the disease, although in general it may be said that nearly all third stage cases will require mechanical paralysis of the muscle before cure can be effected.

GENERAL MEASURES FOR ALL CASES.

Certain general rules of treatment can be laid down to fit all cases. The patient must be restored as nearly as possible to normal, both organically and functionally. This should be accomplished first by removing any possible cause of the trouble in disease elsewhere, second by removing any possible local irritation by giving a bland diet; third by endeavoring to secure a quieting of the nervous system in general by education, general upbuilding, and sedatives, as bromide or luminal.

DRUG TREATMENT.

Apart from the above mentioned sedatives, in mild cases it is advisable to attempt cure by trying to bring about a better balance between the vagus and sympathetic nervous system. The principal drugs which may be tried are belladonna, suprarenal, pituitary extract and benzyl benzoate. Belladonna is known to be almost specific for certain spasms of the digestive tract. For esophageal spasm above the cardia it is very valuable. However, the results of its administration in real cardiospasm are very uncertain and generally disappointing. When given it should be administered to the physiological effect of producing dryness of the throat or dilatation of the pupils and, if it appears to be beneficial, it should be continued for several months in a dosage just under that sufficient to produce uncomfortable physiologic effect.

Theoretically, pituitary extract should be the drug of choice in cardiospasm as it is supposed to cause contraction of the broad musculature of the digestive tract, at the same time producing a contrary relaxation of the sphincters. I have noted some good results from its administration but unfortunately with no regularity and probably no more often than after suprarenal, which should theoretically make all sphincter spasms greater as the physiologic effect is supposed to be just the opposite of pituitary on the hollow organs and sphincters. I have had patients completely relieved after the giving of suprarenal. My experience, therefore, has led me to believe that we can not treat these spasms logically and with precision but must use these drugs em-

pirically, using one after the other, if necessary.

The last drug, benzyl benzoate, is supposed to act directly by relaxing unstriated muscle fiber. I must confess that I have found this drug in the majority of instances absolutely inefficacious in producing relaxation of either broad muscles or sphincters of any part of the digestive tract.

MECHANICAL TREATMENT.

If the foregoing measures have all failed to cure a mild spasm which is, however, causing the patient great inconvenience, the same sort of treatment should be instituted as is required in practically all cases of severe and persistent spasm before cure can be brought about, namely, forcible temporary paralysis of the cardia muscle by means of mechanical dilatation. By securing temporary paralysis and inability of the muscle to contract for some days, it is hoped to break the habit of contraction.

The most perfect instrument for this purpose is the Plummer water dilator, which consists of a tube like a stomach tube, with a whale bone staff in the center to make it stiff, a tip on the end, and just above the tip a rubber, sausage-shaped bag, the cavity of which communicates with the inside of the tube through a series of perforated holes in the latter. Over the rubber bag is a silk bag to retain the shape of the inside bag when it is dilated with water, and over the silk bag is another rubber bag to secure smoothness in passing down the throat. The other end of the tube connects with a Y, one arm of which is fastened to the water faucet and the other to a gauge.

It is always necessary to pass the instrument down the patient's throat with the tip threaded on a fairly strong thread which has been previously swallowed by the patient. The night before dilatation is to be attempted, the patient swallows about 8 feet of waxed silk twist or thread, little by little, so that it will go down the throat in a straight line. The following morning he swallows 4 to 6 feet more of the thread. The object of having the thread swallowed in two sessions in this manner is to avoid the possibility of having knots on the thread. In case the part swallowed during the evening has caught in the esophagus long enough to become knotted this knotted part is given a chance to pass on down so that

the part swallowed in the morning will be unknotted as it is drawn tense by traction. The end of the thread passes out of the stomach and through a number of coils of the upper intestines in such a way that firm traction may be made on the thread without pulling it up. The thread will serve as a guide for the dilator and, if held perfectly taut, the dilator will, when its tip is threaded on the thread, be guided in a perfectly true direction through the spasmodic contraction. Without the help of the thread in guiding the dilator, it would be impossible to use sufficient force to push the dilator through the spasm in many instances without grave danger of perforating the esophagus. I have seen a number of instances of long standing spasm in which the lower esophagus was tortuous and made a sharp angle before entering the stomach. In these instances the dilator could not possibly make the turn without the thread as a guide. Again, there are many cases in which the lower end of the esophagus is dilated and a pouch formed completely surrounding the spastic muscle which remains as an elevation in the center, so that any instrument introduced from above will enter the pouch much more readily than the small opening in the center.

TECHNIQUE OF DILATATION OF THE CARDIA.

The tip of the dilator is threaded on the silk thread and after moistening the rubber bag of the dilator with either plain water or glycerine, it is started down the throat in the same manner as a stomach tube excepting that it is necessary for the patient to keep the head bent well backward. When the tip of the dilator meets the spasm, the obstruction can be felt. Then, if the instrument is pushed down about three more inches, it will be in correct position with the middle of the rubber bag engaged in the spastic muscle. Another method of determining how far to introduce the dilator is by measuring the distance of the spasm from the teeth by introducing a stomach tube until it meets the obstruction and then putting a mark on the dilator at a corresponding position.

After the dilator is in situ, there is very little more discomfort felt by the patient from the tube being in the throat than would be felt from an ordinary stomach tube. Water is then allowed to flow slowly from the faucet into the instrument, dilating the rubber bag and at the same time indicating the amount of pressure

in the bag on the pressure gauge. As the bag fills with water, there is a strong tendency for it to be drawn into the stomach so that the tube must be held very firmly with one hand close to the patient's teeth. If this pulling sensation is not felt there is considerable doubt as to the dilator being right in the muscle. As the dilator is being filled and held in position in this way, each heart beat of the patient can be plainly felt against the bag.

Water is allowed to slowly continue flowing in until the patient complains of pain by raising his hand or the gauge shows that the desired pressure has been reached. The average amount of pressure will be from 12 to 18 pounds. There are many patients who can not stand a pressure of more than 8 pounds. No matter how little pressure is registered on the gauge, if the patient experiences pain, the pressure is immediately lowered or there would be danger of rupture of the esophagus. In the absence of pain, it is no easy task to be able to determine just how high to carry the pressure. Too little pressure, by failing to entirely paralyze the muscle, will result in failure to cure, while too great pressure will cause rupture. It must again be emphasized that the occurrence of pain necessitates immediate lowering of the pressure. It is generally my practice to retain the pressure reached for some seconds after which the pressure is released and the tube withdrawn an inch or so and the pressure again raised to the same point. This is done in case the instrument may have been introduced too far and have missed a successful stretching at the first time. The dilator is then withdrawn, the thread cut close to the teeth and swallowed.

At first we used cocaine on the throat, but it is rather difficult to obtain satisfactory anesthesia and there is very little difference between passing the instrument down the anesthetized and unanesthetized throat, so that we have abandoned the use of cocaine except in case of a very irritable throat.

In cases where there is marked food retention, the esophagus should be washed out before the dilatation to prevent any possibility of aspiration of food.

It not infrequently happens that after the dilator is withdrawn blood is seen on the rubber bag or the patient expectorates some bloody mucus. A small amount of blood need not excite any alarm and, in fact, I rather like to

see it as it shows that we have obtained a fairly high degree of dilatation.

It occasionally happens that one or more of the bags bursts from the amount of pressure used. Ordinarily, this will give no trouble for, if all of the bags burst, the water will simply run out into the esophagus and stomach. If the inside bag bursts, the water will usually run back through the hollow tube when the pressure is released. In one instance, however, I had a very embarrassing experience by a very small rupture occurring in the inside bag high up, above the spasm. The water filled the outside rubber bag which refused to burst and settled in the lower part of the bag which was below the spasm, assuming the size and shape of a lemon. The more that effort was made to withdraw it, the more the water was forced into the extreme lower part. What I should have done would have been to have put the patient in the reclining position so that the water would have run up hill and out of the tube. I did not think of that at the time and was forced to pull this large dilated bag up through the esophagus, using a considerable amount of force and with considerable shock to the patient. I think that another time I would be able to handle this complication, should it occur.

IMMEDIATE RESULTS.

Immediate results of this operation are most spectacular, in fact I know of nothing in medicine or surgery which is comparable with it. Patients who have not been able to swallow with comfort for weeks, months or years can at once partake of a large meal with perfect comfort, except for a slight soreness which may continue for several days. Their surprise and gratification is unbounded. Within the past year we treated a young farmer from near Baltimore, who had not eaten a meal in comfort for nearly three years. Immediately after the operation he departed for home but stopped in Baltimore for his lunch. When he felt the meal enter his stomach without difficulty his joy so overcome him that he broke down and cried.

Practically every case which is successfully done will be immediately improved.

PERMANENT RESULTS.

When the operation is successful, the sphincter muscle has been temporarily paralyzed and is incapable of contraction for possibly a

week. By this paralysis we hope to, and usually do, accomplish a breaking up of the habit of contraction. In the course of a week or possibly longer, however, a certain number of cases will recur, in that the muscle again regains its power and goes into abnormal contraction. In these instances it is necessary to again paralyze the muscle. Each time that it is done there is more likelihood that the results will be permanent. I believe that it is possible to ultimately cure every case of cardiospasm.

We have to date treated 50 patients by this method. Of this number 30 were dilated once; 12 were done twice; 5, three times; 1, four times; 1, five times; and 1, six times, which is the greatest number of times that it has been necessary to treat any patient.

Of the 50 patients, 9 were in the first stage; 23 in the second stage; and 18 in the third stage, with marked sac formation in the esophagus. Of this number 28 have been apparently permanently cured; 9 have been very much improved, so much so that they see no necessity of having further treatment, although they occasionally feel some slight manifestation of the spasm; 5 were only temporarily or slightly improved; and 8 were unimproved.

Of the 28 cures, 18 were cured by one dilatation; 4 by two; 3 by three treatments; 1 each by three, four and six treatments.

The 9 cases who were much improved might almost be called cured. Of these 3 were treated once, 5 twice, and 1 three times.

The other two groups of cases, those temporarily or only slightly improved and those unimproved, 13 in number, can be explained mostly upon the ground of either insufficient dilatation, refusal of the patient to continue with the treatment, poor technique or inability to get into the spasm, and poor choice of patients. In several instances it is very questionable whether the instrument passed the cardia and the patients refused further trial. Lastly, there was a small group of patients in whom the cardiospasm was only incidental to many other complaints. In some of these instances actual cure of the spasm took place, although because they continued to have some symptoms they were placed in the group of unimproved.

It is a well known fact that there is a certain type of neurotic individual who must have trouble of one sort or another. In these people it has been recognized for some time that

actual disease may be removed, as when a manifestly diseased appendix is removed and yet the patient may either have symptoms in the same place or transferred elsewhere. We have learned some time ago not to operate on these individuals for their chronic troubles unless the symptoms were definitely those of the diseased organ in question. From our experience with cardiospasm we have reached the same conclusions in this trouble. Some patients will have spasm of high degree accompanied by dilatation above the spasm, as demonstrated by the x-ray. Treatment will relieve the spasmodic contraction and the patient is undoubtedly improved organically and functionally, as shown by both passage of the stomach tube and the x-ray, and yet the patient may go on having symptoms similar to those he had before or will develop new ones. We have unfortunately tried to dilate some of these patients with the result that they are placed to our credit as unimproved.

I think that it may be safely said that every patient who has a well marked cardiospasm giving symptoms and who is not a "neuro" may be permanently cured by the mechanical treatment, if done properly and repeated as often as may be indicated.

DANGERS OF THE OPERATION.

So far our mortality is nil. So also, morbidity is nearly nil. In one instance we traumatized the larynx rather severely so the patient was hoarse for about ten days. In another we produced considerable traumatism of the pharynx with swelling and intense pain. Twice there was a moderate degree of shock and in one other patient a great deal of pain at the cardia, which lasted for several days. In only one was there a hemorrhage which was rather profuse in amount. This constitutes our total morbidity. As a rule, the patients come to the office for treatment and return home afterwards.

When one has had experience with the instrument, it is not a difficult procedure. But it is not something to be attempted lightly by one who has not had previous experience with it. The operation calls pre-eminently for an experience and the exercise of the judgment which comes only from experience. One obtains after a certain time a delicacy of being able to feel what is going on during dilatation just as a more experienced fisherman can tell often what sort of fish is on the line.

I must confess that I had done a number of dilatations before I ceased to have a feeling of dread before the operation and a feeling almost of mild shock afterward from the strain under which I was working. Even now after having performed the dilatations a great many times, if several weeks go by without having done it, I have more or less the same sensations when again doing it.

CONTRA-INDICATIONS.

We have been compelled to refuse to dilate a number of patients who had conditions which would contra-indicate dilatation. Thus, many of our patients have had aneurysm. In fact, there have been so many patients who had a high degree of cardiospasm together with dilatation of the aorta that it would seem that there might be some common causative factor. So also in cases of high blood pressure it is unwise to dilate the cardia unless absolutely necessary. It has been demonstrated that the simple passage of the stomach tube is capable of causing a rise in blood pressure of from 40 to 60 mm. of mercury. Serious heart trouble would contra-indicate the use of the dilator.

Cancer of the esophagus might produce serious hemorrhage and traumatism if forcible dilatation were tried. It is, therefore, necessary to be very careful in ruling out this condition in making the diagnosis. So also other obstructions of the esophagus, as by a tubercular abscess surrounding the esophagus, cirrhosis of the liver with varicose veins in the lower esophagus, and possibly other conditions, should be ruled out, else death would very likely result from attempted dilatation.

When cardiospasm of such high degree exists as to endanger life through inability to retain food, then it becomes necessary to choose between the danger of the trouble itself and the danger of attempted cure in the face of one of these other conditions being present. One must not forget the rule attributed to Hippocrates, "If you can not do good, at least do not harm."

I will close by emphasizing the fact that cardiospasm is not uncommon. It is often not diagnosed. The patients can be promised definite relief if diagnosis is made and correct treatment instituted. On the other hand, if the patient is denied this treatment, the majority of cases of more severe cardiospasm will

never get well and not a few will prove fatal.

The Rochambeau.

CLINICAL APPLICATIONS OF BASAL METABOLISM DETERMINATIONS*

By JAMES H. SMITH, M. D., Richmond, Va.

The role of oxygen in metabolism is not a new study. The method of indirect calorimetry, in which heat production is measured by oxygen consumption, is comparatively new. In order that the subject may be set off clearly from certain other features of tissue oxidation, these will be briefly touched upon.

The respiratory quotient is the ratio of carbon dioxide output to oxygen consumption. Since it varies with the class of foods burned, oxygen has a variable heat-producing value. As a standard 0.82 is generally accepted as the normal respiratory quotient, giving to oxygen a caloric value of 4.83 per litre. With fixed standards, we are no longer concerned with the respiratory quotient.

"The vital capacity of the lungs:" This is a phase pertaining to the oxygen supply to the blood, whereas the metabolic rate may be said to fix the demand for oxygen. The vital capacity is the volume of a complete expiration, after the deepest possible inspiration.¹ It is influenced chiefly by pulmonary and circulatory defects without as a rule affecting the metabolic rate. Increased muscular exertion due to dyspnea, may be expected to cause moderate acceleration, and, indeed, in a few cardio-renal cases, metabolic rates have been found higher than could be explained on the basis of increased exertion.²

Several years ago it was established that the carbon dioxide tension of the alveolar air is equal to that of the blood serum, which latter is an index of the alkali reserve of the blood, thus affording a simple and clinically reliable measure of acidosis.³ It is not unlikely that further studies will show significant relations between blood composition and total cellular metabolism. Peabody² found a considerable degree of acidosis in some of his cardio-renal cases with increased metabolism. The affinity of the blood for oxygen has been used as a measure of acidosis in cardio-renal disease with dyspnea.⁴ Metabolism determinations were not made in the studies reported by Lewis.

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Lawrence J. Henderson⁵ speaks of the blood as a physico-chemical system, and states that no change can be made at any point without producing changes at all points. The concentrations of free and combined oxygen, of free and combined carbonic acid of the serum, of serum chloride, and of the hydrogen ion represent six variables, for which in a given blood, when values are assigned to any two, the values of the other four are determined, and the condition of equilibrium unequivocally defined.

Barcroft⁶ found that coincident with the secretion of saliva by the submaxillary gland, the oxygen used by the gland is increased seven times.

Indirect calorimetry, then, dealing with the end result of oxygen consumption, has interesting relationships with intermediate phases of oxidation, both physical and chemical.

The adjective, "basal," as applied to metabolism, signifies the minimal heat production. All purposive activities of the voluntary nervous system are excluded, and those also of the involuntary system as far as possible, approximating the "vegetative" state without the digestive and absorptive processes. To this end, the time selected is about twelve hours after the last meal, and the patient is kept at rest in bed for a half hour. Conversation and all disturbing factors are reduced to the minimum. Thus it is endeavored to determine the minimal oxygen consumption per minute, and its relation to the normal, for the patient's height, weight, age and sex, after corrections for temperature and barometer have been made. A ten per cent. variation above or below normal is not regarded as pathological.

With few exceptions, the basal metabolic rate is affected by only two conditions—fever and thyroid diseases. The exceptions are usually not difficult of clinical recognition. They include on the plus side certain cases of pernicious anemia, leukemia, diabetes, and the latter weeks of pregnancy.⁷ In acromegaly, basal metabolism is found to be increased; and in hypopituitary conditions, the rate is below normal. These variations rarely exceed 20 per cent. in either direction. There is little doubt that Cushing's and Boothby's statements on this subject are based on due consideration of the functional relationships between the thyroid and pituitary glands.

On the side of lowered metabolism, inani-

tion from any cause may tend to reduce the rate.

The effect of fever on metabolism is important, in that the normal basal metabolic rate of a febrile patient can be arrived at only by inference, and the method has but little application in the presence of fever. Roughly stated, a rise of one degree F. in body temperature, results in an increase of metabolism of 10 per cent.⁹ The converse, of course, does not hold. Very high metabolic rates due to overactive thyroids usually exhibit little or no rise in body temperature.

The "specific dynamic action" of protein and dextrose is frequently spoken of in recent years. By this is meant that, following protein feeding, and to a lesser extent carbohydrates, cellular metabolism is increased. At the insistence of Lusk,¹⁰ in this country, the phrase will probably be limited in its use to the effect of ingested food, in order to avoid confusion with other heat-raising agents such as thyroxin and possibly suprarenin.¹¹ The selection of the post-absorptive stage for metabolic tests is with a view to eliminating the influence of the digestion and absorption of food.

In practice, the vast majority of abnormal metabolic rates are attributable to the thyroid. The test is of value for:

- (a) Differential diagnosis;
- (b) Determining the severity of the thyroid condition and the treatment indicated;
- (c) Estimating the results of treatment.

Overactivity of the thyroid has to be distinguished from nervousness due to other causes, and from chronic infections. Nervousness may be of a vague character difficult to define, or it may present the qualities of a special symptom-complex. The "effort syndrome" is likely to show an irritable heart action and vasomotor and secretory phenomena suggestive of hyperthyroidism. The pulse in the effort syndrome shows more tendency to fall to normal in repose, and the metabolic rate is normal.¹²⁻¹¹

If "vagotonia" is to be regarded as a disease entity,¹³ metabolism tests should prove helpful in picking out those with a thyroid element, and emphasis should be placed on the endocrine factor when present. Means¹⁴ has tentatively suggested that the vagotonic types of thyroids are those which show a pulse slower in proportion to metabolic rate than do the sympatheticotonic cases.

In sections where goiter is endemic, coincident neuroses must often present themselves. At a recent county fair in the mountains of Virginia, in the most casual manner, I counted eight goiters in women. In this connection, Plummer's¹⁵ statement is of interest: "That introduction of bacteria into the digestive tract is an important factor, if not the primary cause, of endemic goiter, is fairly well established." The metabolic test is especially helpful in those cases with manifest goiter, presumably of the simple type, and yet presenting symptoms or signs of hyperfunction.

A good deal of work has been done¹⁶ to determine the effect on the thyroid of infections generally. Farrant¹⁷ especially has reported in detailed and classified fashion a long list of infections in which the thyroid was studied clinically, at autopsy, and experimentally. The impression gained from the article is that the conclusions are reached on somewhat inadequate data, and, as far as I know, they have not been sufficiently confirmed in the seven years since his article appeared.

Bacterial infections may give rise to confusion as to thyroid activity in three ways:

1. The thyroid may itself become the seat of infection and a thyroiditis with increased functional activity result:

2. Symptoms of infection in other tissues, particularly chronic infections such as tuberculosis or focal infections, may simulate those of hyperthyroidism; or

3. Such chronic infections may, by a toxic effect on the thyroid, excite it to overactivity.

The last two observations apply most strikingly to tuberculosis. In another paper¹⁸ I have called attention to the importance of recognizing pulmonary tuberculosis when it underlies a seeming or real thyroid condition. Although McBayer,¹⁹ on the basis of his studies, does not think either the metabolic rate or sugar tolerance promises much help in differentiating incipient hyperthyroidism and incipient tuberculosis, this question is not yet definitely settled.²² However, the emphasis here belongs on recognition of tuberculosis by such means as we have, lest radical treatment be instituted for hyperthyroidism, when the latter is only secondary, or does not in fact exist.

On the basis of metabolism studies, it should be possible to control much of the speculation so rife in recent years, by which the most diverse states have been ascribed to lack of

thyroid secretion. In cases of obesity particularly, it will be easier to recognize the genuine influence of thyroid poverty.

I am inclined to agree with Means²⁰ in that thyroid products should be sold to the laity only on prescription.

The metabolic rate, while not the sole criterion of operability, is doubtless the best single index of the severity of hyperthyroidism or the grade of myxedema; and the best single guide to treatment of both conditions. Experimental and therapeutic injections of known quantities of Kendall's thyroxin bear out this claim.¹⁵ Crile²¹ operates on cases clinically hyperthyroidal with normal metabolism. No doubt his wide experience justifies his position. This does not alter the value to the average clinician of a knowledge of the metabolic rate when determined by competent technique. It may not determine his ideas of therapy, but it may help to guide him in the application of the views he holds. If operation is to be done, the crest of the wave of intoxication can be avoided, and the time can be better selected. These considerations hold no less for exophthalmic goiter than for hyperthyroidism, or the toxic adenoma of Plummer. Though it is generally recognized that there is something more to exophthalmic goiter than mere hyperthyroidism, and that treatment of any kind does not afford the same measure of relief, yet the thyroid remains as the pathological keystone, and affords the only present effective point of attack.

In those peculiar thyroid cases presenting signs both of over and under activity, probably representing abnormality not only of the thyroid, but of other endocrine glands, basal metabolism estimations should prove very helpful. Once or twice in the past, I have been a good deal at a loss to know whether the patient needed thyroid extract or treatment to reduce the activity of the gland.

The final value of the test is to know the results of whatever treatment is employed. If ligation or radiation has been done, the results can be determined and the future course decided upon. If partial thyroidectomy has been practiced, any necessity for roentgen ray or radium exposures as an adjuvant is revealed. By checking the results obtained from time to time, a favorable outcome is more assured.

SUMMARY. The role of metabolism studies in thyroid diseases has often been compared to that of the thermometer in febrile diseases; one

is a measure of heat production, and the other of the degree of temperature. Clinically, I think a still better comparison is seen in the determination of urinary or blood sugar in diabetes; in both instances the findings confirm the diagnosis, indicate the degree of functional derangement, and guide the treatment. We will be led into error if we blindly follow any single laboratory study. But, if we intelligently correlate basal metabolism findings with other data, keeping an open mind as to future developments bearing on the interpretation of results, we may expect the test to take its place among our more important laboratory aids. At present, it seems fair to say that it helps to distinguish abnormal thyroid conditions from other diseases, to guide us in our treatment of recognized thyroid disease; and to indicate what has been accomplished by the treatment followed.

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CLINICAL SYNDROMES OF VASCULAR CRISES*

By WM. H. HIGGINS, M. D., Richmond, Va.

In any comprehensive study of diseases of the vascular system, there will be found a group whose pathological basis may be identical, yet whose clinical manifestations may be entirely dissimilar. These pathological changes may share in common the same etiological factors, but vary only in the part of the vascular system which may be involved. Since it is probable that arteriosclerosis is preceded by an abnormal irritability of the vaso-constrictor mechanism, a proper interpretation of the underlying causes during the presclerotic stage is obviously desirable. The importance of the prompt recognition of these syndromes is clear when we realize that arterial disease furnishes the fundamental, morbid process in the larger number of deaths after the fortieth year.

The gravity of arterial degeneration is further shown by a decided increase in cardiovascular diseases during the last two decades. According to Elsner, this increase is greater the farther we are separated from hospital clinics. In five thousand cases of internal diseases seen by him in private practice, more

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

than ten per cent. showed advanced arteriosclerosis. No age is exempt, as Andral, Fischel, and Chiari have pointed out that of all subjects examined in Prague, between the ages of two to twenty-five years, 48.7% showed evidences of beginning arteriosclerosis in the intima of the aorta.

It is not the purpose of this paper to deal with the various factors concerned in the production of arteriosclerosis or to discuss its general symptomatology. My interest, however, has been drawn to those types of vascular presclerosis not commonly met with in our daily practice. I refer to those in which the symptom-complexes are due to either local or general vascular contractions or narrowing of the arterial bed. The clinical syndromes vary according to their location in the body, and on account of the similarity to other diseases, their interpretation is at times attended with considerable difficulty.

Several years ago, Pal introduced the term "vascular crises" to describe certain clinical pictures brought about by an over irritable vaso-motor mechanism. His contention was: "When the tension is produced by contraction in a definite vascular area, local consequences follow and dominate the picture. These are manifest chiefly by a peculiar painful sensation and local disturbance of function. General phenomena to a greater or less extent are present at the height of the tension."

He divided the vascular crises into (1) vaso-constrictor or hypertensive crises, and (2) vaso-dilator or hypotensive crises. Although his conclusions have been modified by later writers, his monograph forms the basis of our present knowledge of this subject. These vascular crises are probably of more frequent occurrence, and explain best a much greater variety of clinical signs and symptoms in so-called functional and organic diseases than we have hitherto admitted. They give rise to manifestations which are transient and tend to recurrence. These may be in the nature of pain or of disorders of function—motor, sensory, or secretory—singly or combined. They may be regional in their distribution, or they may be general in character.

The local spasms, affecting chiefly the extremities, are usually classified as purely vascular diseases, but, since they are so often indicative of a vegetative or central nervous lesion, they may not always be properly included under this heading. For example, there

are the tonic hyperaemias, such as erythromelalgia, which is distinctly due to sympathetic stimulation, although its intermittent symptoms of pain, redness, and heat identify it with vascular diseases of an obliterating or spasmodic type.

We can recognize also the spastic anemias, such as Raynaud's disease, intermittent claudication, migraine, acroparesthesia, the chronic vaso-constrictor spots of Tracy, and the vaso-motor ataxia of Solis-Cohen. Here, the chief results are due to an intermittent vaso-constriction, yet there is considerable confusion as to their proper etiologic classification. Early vascular changes may well be one of the underlying factors, but as stated by Jelliffe, certain of these types are unquestionably related to the endocrinopathies, others to neuritic syndromes, and still others are exclusively psychogenic.

The conditions underlying these spasms are complex, and are far from being thoroughly understood. Wolfsohn has grouped the stimuli capable of producing these effects through the vegetative nervous system under the following headings: mechanical, chemical, emotional, and electrical.

In a normal individual, the blood supply to any part of the body is regulated in accordance with its functional needs by an adjustment between the vertebral sympathetic on one hand and the autonomic system on the other. Any variation in this vaso-motor equilibrium tends to bring about definite syndromes according to the structures involved.

Suffice it to say, hypersensitiveness from any cause in the vaso-motor system is promptly registered in the peripheral vessels. These recurring fluctuations may be of only temporary moment, but their effect on the vascular system may be such as to produce definite circulatory disturbances. Of these, the most constant and far reaching are the degenerative changes in the capillaries themselves.

Pal further pointed out that a vascular spasm may explain the sensory symptoms in pure anginal attacks, some cases of Adams-Stokes' phenomenon, the evanescent muscular pains in subjects of arteriosclerosis, and cerebral angiospasm producing transient paralyses or aphasias. He produced evidence to show that the crises of tabes in cases associated with hypertension may be best explained in this manner.

In lead poisoning, he attributed the usual

symptoms of headaches, convulsions, coma, the transient amblyopias, the colic and anginoid attacks to one common denominator—a marked rise in blood pressure associated with more or less localized spasm.

In this compilation of diseases having in common the same physio-pathological mechanism, there is a closely related group which I desire to discuss in more detail under the caption, **GENERAL VASCULAR CRISES IN CHRONIC HYPERTENSION.**

Whatever difference of opinion may exist concerning the cause of high blood pressure, it is generally conceded that the chronic hypertensive state may be a gradual one, and in fact may exist for many years without producing symptoms. During this period it is well known that the freedom from discomfort is due to two factors. The heart undergoes a compensatory adjustment and not only increases in size, but also increases its efficiency to meet the extra requirements. The arteries likewise exercise their reserve power and undergo certain proliferative changes. In many instances, the kidneys are only slightly involved and show a functional output well within normal limits. This period of well being, however, is limited, and the usual sequel in cases of this type is familiar to every one. Sooner or later, demands on the heart resulting from stress and strain of a continuously elevated pressure outrun cardiac adaptability, and exhaustion of the heart muscle supervenes. In some cases, an intercurrent infection or an unexpected apoplexy may be the final episode; or, again, the nephritis may assume the major role. Recently, Elliott has described a clear cut circulatory syndrome under the name of "high blood pressure stasis." In this type of circulatory failure the blood pressure formula remains but little altered despite the increasing circulatory embarrassment, and until the inevitable antimortem fall in pressure occurs, there exists the anomaly of a failing ventricle with a sustained blood pressure.

After eliminating these types of circulatory disturbances in chronic hypertension, there remains another group which in many respects is distinctive and worthy of our consideration. During the past year I have been impressed with certain clinical entities which seemingly may be catalogued as a separate class. The patients as a rule are those who possess an unstable nervous system, and in whom the usual symptoms of high blood pressure are

frequently not pronounced. There is generally a history of comparatively good health until there will be periods of days or weeks when intermittent attacks of numbness or tingling will be complained of in one or more of the extremities. Fleeting pains will be felt in various parts of the body and there may be a sense of weakness or dizziness at intervals. In two instances, there was a history of transient amblyopia associated with a mild confusion of ideas. One patient experienced intermittent cramp-like pains of a definite anginoid type in the region of the precordium.

The physical findings in these cases were those usually present in a chronic hypertensive patient with a well compensated circulatory mechanism. There was no evidence of cardiac embarrassment, nor any condition suggesting a high blood pressure stasis. Between the attacks, the blood pressure formula was moderately high, but during the periods of acute exacerbation, there was a sharp rise in both the systolic and diastolic readings, varying from twenty to forty mm. Hg. over their average height.

The following history, in which only the essential points are given, will serve to illustrate the type under discussion.

White woman, age 56, was referred to us in November, 1920, on account of sudden attacks of vertigo, pains over the body, and weakness. Her family and personal history contain nothing of significance. She states that for the last two or three years she has been subject to darting pains in various parts of the body, at times becoming rather acute in the region of the precordium. During these attacks, which may last for several hours, she has been unable to stand, but as a rule she is only dizzy, extremely weak, and complains of numbness in one or more of her extremities.

She was kept under observation for several months, during which time she was examined frequently, both at the height of the attacks as well as in the interim. The only difference between the physical findings at the two periods was in the arterial tension. During the quiescent stage, her blood pressure averaged one hundred and sixty, systolic, and ninety diastolic. Studies on her blood and urine indicated no extensive renal pathology. With the onset of the acute symptoms, the pressure rose from forty to sixty points in both the systolic and diastolic phase.

We have here a remittent type of circulatory

disturbance which differs not only in its clinical course with the more common forms of circulatory failure in chronic hypertension, but also one in which it is believed there is a different pathologic mechanism.

According to Moschowitz, evidence is accumulating to show that chronic nephritis with hypertension is a primary vascular disease, and that in many instances lesions of the terminal branches of the arterial system are demonstrable even before gross lesions of the kidneys are manifest. He and others have shown that this arterio-capillary fibrosis is merely the localized and prominent manifestation of a generalized capillary and vascular disease. Furthermore, his observations lend support to the belief that hypertension is not of renal origin, but rather that it is one of the factors in the production of this arterio-capillary fibrosis.

It seems reasonable, therefore, to assume that in some instances of chronic hypertension, one of the many vaso-motor stimuli capable of causing a general hyperirritability of the peripheral vascular system may be present, and produce the clinical picture under discussion. In the local spasms, it has been shown that such changes may take place. Raynaud's disease, for instance, is due to a persistent or intermittent vaso-constriction resulting eventually in gross arterial degeneration in the affected area. Intermittent claudication is an angiospastic syndrome whose chief pathology is found in the arterial system, yet there is reason to believe that other causative factors precede these changes. With this underlying basis, it does not seem difficult to explain the general manifestations which occur when a wide spread arterio-capillary spasm has taken place.

The importance of the differentiation of these various types of circulatory disturbances in high blood pressure subjects is not only of pathologic interest but, from a therapeutic standpoint, it is of vital significance. Whereas digitalis is the chief medicinal agent in the usual types of cardiac failure and blood pressure stasis, it is needless to add that in the vascular crises of chronic hypertension, its use is contraindicated. For the same reasons, the administration of the nitrites in the reverse conditions may prove of help in one and danger in the other.

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THE EARLY RECOGNITION OF ACUTE APPENDICITIS*

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In presenting this paper I am aware that I am considering a disease well understood by the profession, I realize that its curative treatment represents one of the greatest accomplishments of modern surgery, and I full appreciate the fact that I will add nothing material to the sum total of the knowledge already to be had on this subject. I wish, however, in this paper to give a brief outline of the course of acute appendicitis, to emphasize the importance of operating early in these cases to insure the best results, and mainly to discuss the causes which prevent early operation in a large percentage of cases. It is possible that the knowledge of what has been accomplished in determining the cause and in the treatment of appendicitis has made us, as a profession, less diligent in striving to obtain the lowest mortality.

Fifteen years of active general practice has impressed me with the fact that the early recognition of acute appendicitis concerns first and mostly the family physician.

Until 35 years ago there was a lack of definite knowledge of the pathology of appendicitis and its relationship to the clinical symptoms, and consequently there was no rational treatment. Fitz was the first to give a complete and definite description of the disease, introduced the name appendicitis, and advocated in no uncertain terms timely surgical intervention. Many other writers have contributed largely to our knowledge, but it is a singular fact that the man who first fully described this disease, and gave it its present name, should advocate at the same time the present accepted method of treatment.

In order to more fully discuss the early

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recognition of acute appendicitis, it would be well to recall a few of the important points of this disease. The appendix is a blind tube, with lumen narrowest at the cecal junction. It has a strong elastic submucous coat, and this layer will, for a considerable time, retain the products of infection in the lumen. This submucous layer is absent in children, and this is thought to be the cause of the variability of the symptomatology of acute appendicitis in children. The arteries to the appendix are of the terminal variety, the best blood supply being on the side of the meso-appendix. Some women have a small connecting artery between the appendix and the ovary, and it is believed that this extra blood supply is the cause of appendicitis being less frequent in women than in men. Also, it is thought that this blood vessel explains the connection between certain disturbances of the female reproductive organs and appendicitis.

The initial stage of acute appendicitis represents an infection within the appendix in the submucous coat. As a result of irritation from this infection there is developed a hyperactivity and a hyperperistalsis of the small intestine with generalized more or less colicky pain over the abdomen. A feeling of nausea and vomiting quickly follow this peristaltic disturbance. After a few hours the infection in the appendix ceases to cause irritation, and the hyperperistalsis subsides, relieving the nausea and vomiting. The generalized abdominal pain leaves, and pain, muscular spasm, and tenderness become localized over the appendix. Before the end of the first 24 hours, systemic reaction against the infection brings on fever and leucocytosis. Murphy emphatically emphasizes the following chronologic sequence of symptoms of acute appendicitis as practically an unvarying picture: (1) Pain, (2) Nausea and vomiting, (3) Local sensitiveness, (4) Elevation of temperature, (5) Leucocytosis. In the second 24 hours of the attack, one of the three following processes usually takes place, unless operated upon: (1) Drainage of the contents of the appendix back into the bowel, (2) Gangrene, (3) Perforation. In the first place, there is a subsidence of the symptoms. In the second and third cases, the entire clinical picture is changed from an acute appendicitis to an intraperitoneal abscess with inflammation or exudation.

These classic cases of acute appendicitis are almost universally recognized. Unfortu-

nately, a large number of cases are not so clear. The early pain may be slight and temporary; often there is no nausea or vomiting; tenderness in the right side may be hardly perceptible, and spasm of the muscles may be so slight that it can be recognized only by a very experienced man. The result is that many cases of early acute appendicitis are watched for several days before a definite diagnosis is made.

In all cases of acute abdominal pain the physician should consider appendicitis. Nichols, of Boston, says that appendicitis outnumbered any other acute abdominal lesion ten to one, and that in cases of recognized acute abdominal infection, it is up to the doctor to prove that it is not appendicitis, rather than delay for the sake of making an absolutely certain diagnosis. We should also remember that the early stages of pneumonia, especially in children, may very closely resemble appendicitis. A careful examination of chest should always be made.

In making a diagnosis of acute right abdominal lesions, we should differentiate appendicitis from the three next most prevalent infections in this locality, viz., acute diseases of gall-bladder, acute disease of right kidney, and perforation of the gastro-intestinal tract. Murphy's clinic used with success the "hammer stroke percussion" and "deep grip palpation" to determine infection of gall-bladder and "fist percussion of right kidney" comparing this kidney with left, to determine infection of right kidney. When apparatus is available, catheterization of right ureter is a valuable aid in recognizing kidney infection. To determine perforation of the intestines, the "piano percussion" over the bowels is useful. It is also very important to palpate each iliac fossa simultaneously. In looking for muscular spasm, always compare the two sides. It is obvious that no morphia or other opiates should be given a patient with abdominal pain until after an accurate diagnosis has been made. It is not always possible for patients in isolated parts to have the benefit of a blood count in the acute stage of the disease. This may be due to the fact that the family physician may have such work done by another physician or at some laboratory, which takes time, or that the patient is some distance from attendant's office. However, leucocytosis taken in connection with the other symptoms, is one of the best evidences of acute appendicitis, and a

blood count is the most accurate means in determining the pathology of the disease. Heyd states that in order to give proper consideration to the blood count, we must assume some figure of count as the highest number occurring in the normal. He states in any normal condition the leucocytosis may not be in excess of 10,000 and the greatest polynuclear cells present not above 75 per cent.

Wilson says that the polynuclear percentage is an index of infection; the total leucocytosis is an index of body reaction; the proportionate relationship is an index of resistance. It is to be remembered, however, that in differentiating acute appendicitis from other acute abdominal inflammations, the blood count gives no real help. And it is also to be remembered that we may have a case of acute appendicitis followed by perforation and peritonitis, with neither pain, tenderness, spasm, vomiting, or high blood count. These cases, however, are rare and usually give a history of a previous attack and develop what is called by experienced men a "peritoneal look".

It is conceded from the operative result of appendicitis during the last 35 years that all cases seen within the first 24 hours and all cases seen in the second 24 hours, with but few exceptions, should be operated on at once. Bancroft reports a series of 584 cases operated on with a mortality of 4.2%, of which there was a 0.83% mortality in cases without drainage and a 6.8% mortality in the drained cases. Worf and Coffey report a larger percentage of deaths in similar cases, the reports covering a series of cases of 822 and 13,445 respectively. Murphy states that every death from appendicitis is chargeable directly to the people for not calling the doctor soon enough, to the doctor for not recognizing the disease soon enough or not referring the case to the surgeon soon enough, or to the surgeon for not operating soon enough. The difference between operating as soon as the case develops and waiting is the difference between a less than 1% mortality and a 5 or 6% mortality. A diagnosis of acute appendicitis can usually be made at the home without the use of laboratory or other special equipment. It may be necessary, in order to determine some cases, to have blood count made or the right ureter catheterized. This can in most cases be arranged for without much trouble, if found necessary. In case of positive diagnosis of acute appendicitis, the patient should be given benefit of operative

measures at once. In case of doubt or inability to secure the necessary information to make a positive diagnosis, the patient should be given the benefit of the doubt and placed where diagnosis can be more definitely made and operation performed, if indicated. Who then is responsible for the delay in operating on a large percentage of these cases? Bancroft reports in a long series of cases that 35% had developed localized abscess or spreading peritonitis before admission to the hospital. It is found from the reports of the hospitals throughout the county that a similar condition prevails, that a large percentage of cases of appendicitis have developed localized abscess or spreading peritonitis before admission. It is hardly necessary to state that the use of purgatives in these early cases is responsible for rupture in some cases. It is true, perhaps, that the surgeon sometimes is responsible for delay in operating on these cases after admission to the hospital, from one cause or another, but, as proven by these statistics, the delay in too large a percentage of cases was caused before the patient came into the hands of the surgeon. The fault then lies largely with the people for not calling a physician soon enough, or with the family physician for not recognizing the condition soon enough, or, when recognized, for not giving the patient the benefit of operative measures soon enough. The public is slowly being made to recognize the importance of calling a physician early in case of acute illness. Public educational measures have done much in this direction, but the family physician can do more. It is the duty of the practicing physicians of this State to lose no opportunity in impressing upon their patients the advantages of early attention in acute cases. The responsibility, therefore, for getting cases of acute appendicitis operated upon in time to subject the patient to the least danger, rests mostly upon the shoulders of the first attending physician. My experience as a general practitioner, coupled with the operative results in these cases, has convinced me that we should give this matter the consideration it deserves.

It is the duty of the whole profession to help educate the public as to the necessity of calling a physician early, and it is the duty of the first attending physician to bear always in mind the probability of acute appendicitis in all acute abdominal diseases. When in doubt, give the patient the benefit of the doubt and

put the patient where operative measures are available, should they be indicated.

If we will do that, we will, in a large measure, reduce the present death rate of acute appendicitis.

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THE OPERATIVE TREATMENT OF DUODENAL ULCER*

By ARTHUR S. BRINKLEY, M. D., Richmond, Va.

In discussing this very important subject, in which every surgeon is intensely interested, I wish to state in the beginning that my opinion is that our views in regard to the operative treatment of duodenal ulcer will undergo a decided change within the next ten years.

At present, the writer is doing three types of operations for this condition. First, perforation with cautery and simple suture; second, excision of ulcer and pyloroplasty according to the technique of Horsley; third, excision of ulcer with cautery and posterior gastro-enterostomy, using the type of operation which seems best suited for the case after the abdominal incision has been made and an inventory taken of the stomach and duodenum with their surrounding viscerae.

It is recognized that extremely unsatisfactory results are often obtained when gastro-enterostomy is done for duodenal ulcer and, judging from the reports of the surgeons doing pyloroplasty almost exclusively, it is apparent that the results are far from ideal. Probably the internist is better acquainted with these poor results, since the patient finally seeks him for whatever comfort he may be able to give. Very often after a gastro-enterostomy or pyloroplasty has been performed, the patient leaves the hospital feeling comparatively well from his rest in bed and proper dieting. The surgeon hearing nothing more from the patient concludes that the cure is permanent, but, if inquiries are made, it will be discovered in many cases that the family physician or

internist has been sought for relief after a few weeks or months of gastric disturbances.

In reviewing the literature, the clinical results from gastro-enterostomy, when performed for either duodenal or gastric ulcer, are by no means perfect. D. C. Balfour says, "Although evidence is conclusive that surgery gives permanent relief in a higher percentage of cases and with less associated risk than any other therapeutic measure, it is also true that the surgical treatment may be made still more efficient." Frank Smithies, of Chicago, who has long been associated with large surgical clinics, in which gastro-enterostomy is the chief surgical method of dealing with gastric or duodenal ulcer, reports observations on 273 patients on whom gastro-enterostomy had been done for relief of dyspepsia. Smithies' 273 cases represent 226 patients operated on for gastric or pyloric ulcer, 12 for gastric cancer, and 35 for duodenal ulcer not involving the pylorus. Of this entire number he reports only fifty-seven, or 20.9 per cent., clinically complaint free; twenty-eight (80 per cent.) of the 35 duodenal ulcer patients had pain or distress, and many of this number had other symptoms such as gas, nausea, vomiting, or eructation. However, as the total number of cases is made up of (1) patients requested to return for examination regardless of their condition, and (2) patients who came voluntarily because they were having trouble, the percentage of cures represented is too low. These results as reported by Smithies certainly cannot be considered satisfactory so far as curing the patient is concerned; still, in certain types of cases, especially where the pyloric end of the stomach and duodenum are fixed by induration and adhesions or an ulcer so large as almost to encircle the duodenum, obstruction to the pylorus from induration and edema, gastro-enterostomy is the only operative procedure I know that can be accomplished under such existing conditions, although the end-results as proven by statistics and my own personal experience are not always satisfactory.

Mayo's no-loop method of gastro-enterostomy with which every surgeon is familiar and which is fully described in Binnie's Surgery. Seventh Edition, page 370, is always employed when gastro-enterostomy is indicated.

Pyloroplasty has found favor with a number of eminent surgeons throughout the country and, while the preliminary reports have

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been very gratifying, it remains to be seen what the end results will be since this operation has only recently been done to any great extent.

G. B. Eusterman, of the Mayo Clinic, who is undoubtedly in a position to speak authoritatively regarding the end-results of this operation, makes this statement in an article entitled, "Diagnostic and Therapeutic Aspects of Late Sequelae of Gastric Surgery," which appeared in the *JOURNAL OF THE A. M. A.*, Oct. 15th, 1921, Vol. LXXVII, page 1248. "My experience with the end-results of several hundred well executed pyloroplasties, many performed under favorable circumstances, has not been encouraging. Recurrence of ulceration in the suture line, adhesions to adjacent viscera, induration, contraction and narrowing, which provoke faulty pyloric mechanism and serious functional disturbances, in the absence of adequate obvious cause, are occasional sequelae. My answer to the charge that gastro-enterostomy is an unphysiologic procedure is that at least 15 per cent. of all pyloroplasties eventually prepare a rich soil for a highly successful gastro-enterostomy. It is reasonable to believe, therefore, that time and an enlarged experience will temper the present laudable enthusiasm for pyloroplasty."

The two methods most commonly used at present are, first, a pyloroplasty combined with gastroduodenostomy described by J. M. T. Finney, of Baltimore, and second, a pyloroplasty described by J. S. Horsley, of Richmond. Of the two operations I prefer the latter because in this operation not only is the ulcer excised but the stomach is returned to as nearly a normal physiologic condition after post-operative convalescence as it is at present possible to do with any plastic operation on the pylorus. This operation, however, has a limited field, in cases when there is a great deal of induration around the pyloric end of the stomach and duodenum; when the duodenum and pylorus are fixed by adhesions, when there is a large perforating ulcer involving the first part of the duodenum, and when the ulcer is situated more than one inch from the pylorus, it cannot be accomplished with any degree of ease or safety.

Several years ago, W. J. Mayo called attention to the curative effect of perforation showing that after perforation and recovery of the patient from the peritonitis, the ulcer heals. Later, D. C. Balfour has reported ex-

cellent results obtained by treating gastric ulcer with the cautery. I quote him as follows: "From a technical standpoint excision by cautery accomplishes much in a simple way which is not true of excision by knife. It is a common observation that the induration around an ulcer is out of all proportion to the size of the crater and that excision sacrifices along with the actual infected area the protective induration with which nature attempts to wall off the infectious foci which exist in the crater. Our experience with the cautery has shown that this wide excision is just as unnecessary as it is in the treatment of infectious foci elsewhere, and that the indurated area can be restored to a healthy condition by destruction of the crater and thorough heat sterilization of the surrounding tissues, as the cautery is held in the punctured crater." In a later article on the "Surgical Treatment in the Bleeding Type of Gastric and Duodenal Ulcer," he further emphasizes the curative results obtained by this method of treatment.

From the small number of cases I have treated with cautery perforation and simple suture, I am led to believe that this method comes nearer approaching the ideal than any of the other surgical procedures and should be employed in all cases where the crater of the ulcer is sufficiently small to admit of thorough cauterization and suture without seriously obstructing the pyloric end of the stomach. It is certainly the least formidable of the operations now done for duodenal ulcer, it requires less time, thereby reducing the danger from the anesthetic, the continuity of the stomach and the action of the pylorus are not interfered with, there is no spreading of the infection like one would get with knife excision and pyloroplasty, the end-result, is anatomically and physiologically nearer perfect than that obtained by any of the other present day surgical procedures.

SUMMARY.

1. There is no one specific surgical procedure by which all duodenal ulcers should be treated.

2. Perforation by actual cautery and simple suture of the wound is the method of choice in all cases adapted to this method.

3. Pyloroplasty comes next nearest leaving the stomach and duodenum normal from a physiological and anatomical standpoint but its field is limited.

4. Certain types of duodenal ulcer must still be treated by doing gastro-enterostomy regardless of what we think of it.

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RECURRING VOLVULUS OF DESCENDING COLON AND SIGMOID FLEXURE WITH MEGACOLON.

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The following case, referred to me by Dr. Douglas Vander Hoof, presents an interesting and, I believe, not very uncommon condition.

Mrs. L. B. W., white, widow, school teacher, age 45, complains of "stomach trouble," rheumatism and neuralgia. Family history not significant, except that the patient's mother died of tuberculosis. Patient states that she has "never had a strong stomach;" even as a child, she had to be very careful as to her diet. Suffered from attacks of abdominal pain which would come on early in the morning and last from one to ten days. No attacks of this character for two years until recently, when two occurred, characterized by severe diffuse abdominal pain, unaccompanied by fever or vomiting. Last attack was four months ago. Bowels constipated as long as she can remember; stools appear normal. Normal weight 125 pounds; today weighs 118.

Examination reveals a patient who is well nourished and does not appear sick. Teeth and gums are in good condition; remnants of tonsillar tissue which do not appear diseased. Heart and lungs negative; blood pressure, systolic, 130; diastolic, 90. Abdomen large; symmetrically distended; no dulness of the dependent portions. No tenderness or masses. Urine shows a slight trace of albumin; gas-tric analysis negative.

The history of the recurring attacks of pain

suggested the probability of a diseased appendix, and, in the absence of definite findings elsewhere, an exploratory operation was deemed advisable.

March 21, 1918, under ether anesthesia, the patient was operated on. A grossly diseased appendix was removed. In addition, the transverse colon was found enormously dilated, appearing to be at least six inches in diameter and having very thin walls. No obstruction of any kind could be discovered to account for this dilatation. It was immediately recognized that the intestinal condition must be one of congenital idiopathic dilatation of the colon; this serving to explain the history of obstinate constipation and abdominal distention. We believed the diseased appendix was sufficient to account for the attacks of abdominal pain, and this, coupled with the fact that the patient's general condition seemed unaffected by the enlargement of the gut, led to the decision not to attempt radical measures. The post-operative course was uneventful and patient was discharged in good condition April 20, 1918, with instructions to report at frequent subsequent intervals.

April 29, 1918, patient returned to hospital and was examined roentgenologically by Dr. D. D. Talley, the results of this examination confirming the observation as to the dilatation of the colon. The three pint barium enema was completely lost in this portion of the bowel.

December 12, 1918, the patient reports that she has been very well up to the past few weeks, when she began to be troubled with frequent loose stools and attacks of abdominal distention; looks well and has good color.

May 13, 1919, patient weighs 124.5 pounds. Looks very well and has had no abdominal symptoms except attacks of flatulence and four months ago had a "bilious attack," characterized by nausea without pain.

October 13, 1919, patient looks exceedingly well. Complains of occasional attacks of nausea.

January 3, 1920, patient still has some flatulence, but looks very well.

April 17, 1920. About two weeks ago, had one of her "gas spells," rendering it necessary to wear a kimono all day. Takes a lapactic pill and mineral oil every night.

August 21, 1920. Patient admitted to Johnston-Willis Sanatorium with the history that for about two weeks she has been suffer-

ing with great abdominal distention, accompanied by severe pain in left side, nausea, and occasional vomiting. Bowels obstinately constipated.



Examination shows patient moderately sick; abdomen tensely distended. White count 10,800; pulse 98; temperature 99.5 F.

August 22, 1920, proctoscope inserted and rectal tube introduced, resulting in passage of much gas and relief of distention.

August 31, 1920. Operation: Under ether anesthesia, a left rectus incision was made about 7 inches in length. The descending and part of the transverse colon was found enormously dilated. While the remainder of the large intestine was somewhat smaller, even this part of the gut seemed to be about six inches in diameter. Apparently about midway the transverse colon, there was a sharp line of demarcation between the extremely dilated gut and the remainder, while the mesentery of the former was similarly sharply differentiated, being dark in color and showing hemorrhagic areas. The cause of the obstruction from which the patient was suffering at admission was immediately obvious. The

elongated mesentery to the very much dilated portion of the gut rendered the intestine so mobile that when feces accumulated sufficiently in this portion, the weight was sufficient to cause the latter to fall downward and to the right, with a resulting angulation of the lower sigmoid, which was fixed; in other words, produced a volvulus. An analysis of the patient's history leads to the conclusion that this had occurred previously and to this occurrence, and not the diseased appendix, is to be ascribed the recurring attacks of abdominal pain, distention, and nausea. Schaaning¹ has recently reported two similar cases.

Believing the cause of the recurring attacks in my patient to exist only in the extremely dilated, mobile part of the gut, it was deemed sufficient to excise it alone, leaving the relatively less dilated ascending and part of the transverse colon. The vessels in the mesentery of this dilated part of the gut were first ligated and the intestine resected. An end-to-end anastomosis was then made, catgut sutures reinforced with silk being employed.

The part of the colon removed was enormously dilated, the greatest circumference being 26.7 inches; the total length being 36 inches. The walls were extremely thin, there being a complete absence of the mucular hypertrophy which constitutes a striking feature of many cases of Hirschsprung's disease.

The patient reacted well from the operation and four months later reported that she was completely relieved of the attacks of abdominal discomfort.

Dilatation of portions of the intestinal tract may occur in any part of it, but the most usual location of such dilatation is the colon. The dilatation may be the result of some obstruction, but in certain cases, there is no evidence of an obstruction existing prior to and giving rise to the dilatation. From the history of the early onset of obstinate constipation and the absence of any evidence of pre-existing obstruction, it is obvious that the case I have reported represents an instance of true congenital megacolon or Hirschsprung's disease.

Though Hirschsprung is often credited with having been the first to describe the pathological condition which bears his name, as a matter of fact, no less than twelve foreign and ten American reports antedate his paper, which appeared in 1886. To Parry is due the credit for the first published report of congenital dilatation of the colon, this author in

1825 having described the condition as encountered by him in the autopsy of an adult in whom it was present.¹ Eleven years later, Ebers reported a case and discussed the condition with remarkable fullness and clarity.



As the name indicates, the etiology of "idiopathic" dilatation of the colon is unknown. A number of theories have been suggested to explain its origin, but none of them is sufficient to explain all the reported cases. It seems advisable to disregard those hypotheses which are based upon the discovery of some definite obstruction as the cause. Cases where this obstruction was responsible for the dilatation are not instances of true Hirschsprung's disease; it is better to apply to them the term "pseudo-megacolon." Obstruction not infrequently occurs not as a cause but as the result of the dilatation, as is well illustrated by the case I have reported. To explain the genesis of the true congenital megacolon, it has been suggested that a colitis may arise, either as a result of bacterial infection or dietetic errors. This colitis leads to injury of the intestinal wall, with a tendency to stagnation of the intestinal contents and the production

of excessive amounts of gas. The pressure of this gas distends the weakened intestine and the ensuing dilatation renders the onward propulsion of the fecal mass difficult, so that hypertrophy takes place. In many of the reported cases, however, the colitis is only a late manifestation; appearing as a consequence and not as a cause. Hirschsprung in his earlier papers emphasized the congenital idea. He believed that the condition was a disease entity, due to some pathological process occurring in utero or arising from a congenital defect. The observation of Concetti in 1899 that there may be demonstrated a deficiency in the muscular coats of the large intestine lends support to Hirschsprung's contention. Formad suggested that there is faulty development of the neuromuscular apparatus of a segment, a theory supported by Bing and Hawkins. Finney² points out, however, that there is often, if not invariably, no demonstrable histological evidence of faulty innervation, the nervous elements constituting Meissner's and Auerbach's plexuses being apparently normal. The attempt has been made recently by Retzlaff³ to revive this theory under a modified form. He believes from the study of a case occurring in a man of 46 years that he has been able to demonstrate the existence of a state of "sympathicotonus," the patient reacting very markedly to subcutaneous injection of adrenalin and being little affected by atropine and physostigmine. Since adrenalin acts selectively on the structures innervated through the sympathetic while atropine and physostigmine influence chiefly those which are innervated by the cranial autonomic, he infers that this patient had an increased irritability of the sympathetic nervous system. The sympathetic supplies inhibitory fibers to the intestine, and, since it is in a state of increased irritability, he contends that it will cause intestinal paresis and resultant dilatation. Kackel,⁴ however, points out that this would fail to explain the subsequent hypertrophy, and he reports a case that he has observed in a child of four and a half years where not only was the patient insusceptible to the dose of adrenalin that Retzlaff³ found effective in his patient, but in Kackel's⁴ case the dose of atropine which Sachs states to be ineffective in normal children produced a decided reaction.

From the appearance of the mesentery, with the dilated lymph and blood vessels, Finney² has suggested that we may be dealing with a

condition of "hypernutrition." It is obvious, however, that granting his contention, we have made no advance in explaining the underlying etiology.

As regards the pathological anatomy of the condition, there are generally both dilatation of the intestine and also hypertrophy of all the coats, though in a certain proportion of cases, mine being illustrative, the muscular hypertrophy is absent. It is the more common belief that the dilatation is primary, the hypertrophy occurring secondarily because of the difficulty of emptying the dilated portion. As a result of the fecal stagnation, there are encountered areas of degeneration or necrosis, the latter occasionally leading to perforation. In the reported cases, the dilatation has been very great; a diameter of six inches and a capacity of forty pounds in one case and a capacity of sixteen liters in a second. These dimensions were exceeded in my case, the greatest diameter being, $8\frac{1}{2}$ inches. The dilatation may be present at birth, and in a case reported by Hobbs and de Richemont, it was so pronounced as to interfere with delivery. In other cases, it becomes prominent later in life.

The diagnosis is based upon the history of obstinate constipation alternating with periods of diarrhoea, together with the results of examination of the patient. In most cases of true idiopathic megacolon, the onset of symptoms dates from birth or very soon thereafter. In his review of the cases reported up to 1908, Finney² states that about 70 per cent. gave symptoms from birth; and about 20 per cent more developed them within a few weeks. The lapse of time without stool is almost incredible in some of the reported cases, being as much as three months in one instance. In many of the cases, this constipation appears to exert an injurious action on the patient's general condition, but in others, and this is illustrated by my case, there may be little or no disturbance of the health.

The characteristic feature found on examination is the abdominal distention. This may be extreme, at times so great that the abdominal circumference exceeds the patient's height. It is important to note that rectal examination may be entirely negative, the rectum not being involved in the dilatation. Other viscera may be displaced by the dilated colon, as illustrated by an interesting case recently reported by Carnot and Friedel.⁵ In their patient, the heart displaced to the right of the

midline, resumed its normal position after resection of the dilated portion of the colon. The malposition had been present so long, however, that the resumption of the normal position gave rise to circulatory disturbances, culminating in the patient's death the day following the operation.

About the only condition which may cause confusion is tuberculous peritonitis. The distention of tuberculous peritonitis is due, however, to the accumulation of fluid, and Finney² states that ascites has never been described in any of the reported cases of congenital megacolon.

Medical treatment can never affect a cure of the condition. If the constipation is amenable to the ordinary cathartic measures and the patient remains in good physical condition, it is probable that recourse to surgery is unnecessary. In other instances, where there is evidence of impairment of the health from the absorption of the decomposing mass in the intestine; or, as occurred in my case, a serious complication should occur, operative measures are distinctly indicated. The nature of these procedures must be determined by the conditions present in the individual case. In young patients, resection of the dilated gut and end-to-end anastomosis has given the best results. It seemed wiser in my case not to attempt such a radical operation; we were content with the removal of that portion of the intestine which seemed responsible for the recurring obstruction, leaving untouched a considerable amount of moderately dilated colon.

In conclusion, it is probable that if surgeons keep in mind the possibility of the occurrence of this condition and, in patients with a history of long-continued, obstinate constipation where physical examination reveals a much distended abdomen, subject the patient to careful roentgenological study, megacolon will be recognized even more frequently than it has been in the past.

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THE HISTORY OF MEDICINE IN THE SOUTH.*

By W. A. LEWIS, M. D., Enterprise, Ala.

At the outset, allow me to make the positive statement that the South has produced as many and as great names as have ever adorned the pages of the glowing history of medicine of any other country.

The name of Ephraim McDowell, the nervy, plucky pioneer surgeon of Danville, Kentucky, will go down in the annals of surgery as the greatest abdominal surgeon of all times. McDowell did his first ovariectomy in 1809; this was several years before the discovery of ether anesthesia and antiseptic and aseptic surgery. McDowell did a great deal of good work as a general surgeon that has entitled him to an enduring fame as one of the greatest surgeons of the world. He stands out as a successful surgeon and, notwithstanding the time in which he lived, overcame the handicaps that forced many timid men to quit. His work stands out pre-eminently as an inspiration to the profession of the entire world and points to better and higher ideals of life. By his original work he opened up one of the broadest avenues in surgery. This work is of such transcendent importance that it entitles the memory of his name to be cherished, not only by physicians, but by all the people of all the nations and of all times. The profession in the South has always taken a great pride in honoring the memory of Ephraim McDowell.

Robley Dunglison, of Virginia, teacher, writer and scholar, deserves a niche in the Temple of Fame. He taught three branches of medicine in the University of Virginia, later accepting the chair of *Materia Medica* in Jefferson Medical College, at Philadelphia. Dunglison was a voluminous writer on many different subjects. His crowning work was his *Medical Dictionary*, that served the profession in this country as a standard for many years, and is still in use.

Crawford W. Long, of Athens, Georgia, discovered ether anesthesia and removed a tumor from the neck of a patient under ether anesthesia in 1842. There are, however, other claimants for this honor. Wells, a dentist of Hartford, Connecticut, extracted some teeth of a patient in 1844 under nitrous oxide gas anesthesia. Jackson, a chemist and physician, in

connection with Morton, a dentist and student of medicine in Harvard Medical College, worked together on ether anesthesia, Jackson making the ether and showing Morton how to use it. Morton made a public demonstration of ether anesthesia in the Boston General Hospital in October, 1846. The surgeon of the hospital, Warren, dissected a tumor from the neck of a patient under ether narcosis. This operation of Warren's was similar to Long's operation, four years prior. Illustrious authorities, like J. Marion Sims, claim Long was justly entitled to the discovery of ether anesthesia. Bill Arp, the noted Georgia writer and philosopher, claimed that the news of Long's use of ether was disseminated over the country, far and wide, somewhat like the shot on the British Regulars at the battle of Lexington, which rang around the world in an incredible short time. So Long's discovery was known in New England, but the details had not been published. The critics of Long do not deny his priority in the use of ether. This is, indeed, the greatest discovery of the world: the discovery of America by Columbus does not equal it. It is the greatest boon to suffering humanity. The discovery of anesthesia has made it possible to establish the great clinics of the world. The good that has been done, the suffering that has been alleviated, the lives of human beings that have been saved are beyond the conception of our greatest thinkers. Georgia has placed a statue of Long in the Hall of Fame in Washington. The University of Pennsylvania has erected a tablet in the hallway of the Medical Department of that great University to his memory. Compared to his great gift to humanity these are indeed, but feeble efforts to commemorate the name of the great discoverer of ether anesthesia.

J. Marion Sims is the brightest genius of American surgery. He was born in South Carolina but settled at Montgomery as a young physician. He made his reputation at Montgomery. The slave owners in and around Montgomery were generous to him. He established at Montgomery the first female infirmary or hospital of the world, and did the plastic operations on women slaves that made him a success and brought him immortal fame. After acquiring his reputation as a great surgeon, he moved to New York City, where he could have broader fields and a wider scope in which to display his wonderful talent and

*Read before the Coffee County (Ala.) Medical Society, June 3, 1921.

skill. He was chiefly instrumental in building the Woman's Hospital of New York City, which was completed in 1857, and is the first hospital of its kind erected in the world. From this hospital has emanated the best obstetrical and gynecological teachings of the world. At the outbreak of the Civil War, Sims went to Europe. He did his operation of successful repair of vesico-vaginal fistula before the credulous Academy of Science of Paris. He was the first American surgeon to carry American surgery across the ocean to the old world.

Sims did more for the relief of women than any other man who has ever lived. By his energy and skill and genius, he established gynecology on a firm basis. Aside from his ability as gynecologist, he did general surgery and is due the credit for the first successful drainage of the gall bladder. This operation was done in New York in 1868. Bobbs, of Indianapolis, preceded Sims a few months in draining the gall bladder, but his patient died.

R. Battey, of Rome, Georgia, deserves honorable mention as one of the leading surgeons of the South. His operation of ovariectomy to induce an early menopause, has contributed largely to the development of abdominal surgery. Perhaps many surgeons have misunderstood the intentions of this operation. Battey, as a gynecologist, has been second only to men like McDowell and Sims. Battey enjoyed a wide reputation as a general surgeon.

W. W. Grant was born and reared near Seale, Russell County, Alabama. He fought in the Confederate Army and located soon after the war in Davenport, Iowa, to practice medicine. In December, 1882, he made the diagnosis of perforated appendix. The patient was a young lady school teacher. She had a purulent fistula in the right groin that soon began to discharge fecal matter. In January, 1883, he enlarged the opening, hoping thereby, to close the fistula, but this operation was a failure. May 14, 1884, he had Professor Andrews, of Chicago, in consultation with the express purpose of removing the appendix, but Dr. Andrews would not agree and suggested a counter opening in the lumbar region, which was done, this operation proving a complete failure. January 4, 1885, the abdominal cavity was entered, the appendix was ligated, but, on account of the many adhesions, was not removed. The ligation of the stump was thought to be sufficient to close the fistula, but

failed. On May 14, 1885, another operation was done and the appendix was dissected out. The attempt to close the fistula at this time was unsuccessful. Dr. Grant moved to Denver, Colorado, and in 1891, successfully closed the fistula, making the fifth operation on this patient. Dr. Grant, in a letter to me says, this patient now lives in Minneapolis, Minnesota, and is strong and hearty. Kroenlin, of Switzerland, preceded Grant a few months in ligating the appendix, but his patient died in a few days. To Grant is justly due the first deliberate and successful operation on the appendix, in the entire world. May 14, 1885, he did a complete appendectomy, the first on record.

Grant's original operation for the removal of cancer of the lower lip, given out by him to the profession several years ago, has stood the test of time, and has not been improved on. Da Costa, in his Manual of Surgery, and Binnie's Surgery claim that it is the best operation yet suggested. He was the first to do an anastomosis of the facial nerve and spinal accessory for facial paralysis.

In this connection I will mention the work of W. E. P. Davis, of Birmingham, Alabama, who first suggested and succeeded in draining the gall ducts. This was a radical departure in the field of surgery and this innovation had a far reaching effect on the surgery of this day. Davis organized the Southern Gynecological Association. He, however, will be chiefly remembered by his original work on the gall ducts.

The South is distinctly the home of abdominal surgery; it was here it originated with Ephraim McDowell; it is in the Southland it has been developed by Sims and Davis. The leading world thinkers on this branch were southern men—McDowell, Sims, Davis and Grant. Abdominal surgery, of all the branches of surgery, is the most fascinating and calls for the very highest degree of skill. Anesthesia and abdominal surgery, both of southern origin, are the prime factors in the establishment and maintenance of the world's great clinical centers.

The name of Stonewall Jackson brings a sensation to every nerve and a thrill to every fiber. The Shenandoah Valley campaign has been immortalized by the fact that General Jackson gave to the world superb military tactics. The greatest thing of the Valley campaign, however, was its far reaching humani-

tarian aspects. The last of the battles of this noted campaign had been fought. Jackson had hit the enemy with such suddenness that they were completely routed from the battlefield, and the entire hospital outfit of the opposing forces was captured. He was to leave next day to join Lee, at Richmond, to help crush McClellan and many sick and wounded of the enemy were to be left. It was then that Dr. Hunter McGuire, of Virginia, the Surgeon General of Jackson's army, made the suggestion to General Jackson that the doctors and nurses of the opponents be returned to their posts of duty. Up to this time, all military hospital attendants, doctors and nurses were, by the rules of warfare, considered prisoners of war. This suggestion of McGuire's met a ready response in the great heart of Jackson and these people were returned to their posts of duty next morning. The returning of hospital attendants, or any physicians or nurses connected with the army, soon was accepted by Lee and Grant in the mighty struggles around Richmond. Later this humanitarian act of Dr. McGuire and General Jackson became a rule of the Hague Peace Tribunal, and one of the accepted rules of modern warfare. This wise suggestion and consummation of returning physicians and nurses engaged in military duty to their places is one of the first of the great forward events of the middle period of the last century, for sick, wounded and dying soldiers.

The work of Dr. McGuire, in the Civil War, in getting belligerents to return physicians, etc., to their commands, where they could render service, of Florence Nightingale, in organizing relief and the trained nurses' profession during the Crimean War, and of Henri Dunant, after his visit to the battlefield of Solferino, where 36,000 French, Austrian and Sardinian soldiers were left dead and dying on the battlefield, gave the inspiration for the organization of the Red Cross. These three notable outstanding events for the relief of suffering soldiers are deserving of the very highest tributes that can be paid to these great persons. It is with peculiar pride to us that our section of country took part in the initiation of this relief work.

Peter Bryce was born in South Carolina but came to Alabama in 1860, to organize the Insane Hospital at Tuscaloosa. He was placed at the head of the Insane Hospital of Alabama as its first superintendent. This hos-

pital was named in honor of him. Bryce is the author of the non-restraint method of treating the insane. This method has been adopted by all insane asylums of the entire world. Up to this time, these unfortunate people were condemned to a life of suffering, bound with chains and fetters, in many instances put in dark and uninviting cells, and nothing was done for their relief. These methods were revolutionized and many insane people are today properly treated, their diseased minds relieved, and many are returned to their families happy and contented in life. So profound was Dr. Bryce's knowledge of the insane that his ideas have been inculcated in the jurisprudence of not only our country, but of Great Britain. His ideas are embodied in the decisions of the high courts of our country and of England. As an alienist dealing with insanity in all of its phases, Dr. Bryce is easily the best authority of the entire world. The insane hospital at Tuscaloosa is a model institution of its kind. Alabama and the entire South are fortunate in producing the man that has made such an impression on the minds of specialists on insanity of the world.

John Allen Wyeth was born and reared in Marshall County, Alabama, and fought in the Civil War with Forrest's Cavalry. Soon after his graduation in medicine, he located in New York City, where he has acquired a great reputation as one of the leading surgeons of the world. He is the author of the bloodless amputation of the hip joint, ligation of the internal carotid artery, treatment of inoperable blood tumors by the injection of boiling water. He discovered that the infection of sarcoma with erysipelas germs would cure this malignant disease. Wyeth organized and established the first post-graduate school in America, this being the New York Polyclinic. He has made a reputation as a platform lecturer, his lectures on General Robert E. Lee and Nathan Bedford Forrest having been heard and appreciated by many audiences. His *Life of Nathan Bedford Forrest* is considered by literary critics a gem.

Dr. Wyeth has met with unprecedented success in his chosen profession in New York City, but he has never lost his identity with his home, the Southland. He has always boasted of Southern birth and has taken great pride in the achievements of this section of the country. Dr. Wyeth has scaled the topmost rung of the ladder of Fame.

William Crawford Gorgas was born at Mobile, Alabama, and reared at Tuscaloosa. Gorgas stands pre-eminently as the greatest health officer of all times. After the notable clean-up of Havana, Cuba, he was appointed as one of the commissioners to dig the Panama Canal. The French had failed to dig the canal on account of malarial and yellow fever. It is the claim of all authorities who know, that this was the deadliest place on the face of the earth. After Gorgas had cleaned up the Canal Zone, it was practically a health resort, and by his efforts he made possible the completion of the canal. The work of Gorgas in Cuba and the Panama Canal Zone has had a far reaching effect; this work conclusively shows that the white man can live and work in the tropics under sanitary rules. Great civilizations will teem in the rich tropics in the next few centuries. The world has been rid of yellow fever except three foci, and the Rockefeller Foundation will soon get these under control. The work of Gorgas and Cowdrey is without parallel in the history of medicine for its immediate and ultimate good accomplished—yellow fever forever gone from the face of the earth, and a great stimulus to help eradicate malaria.

Gorgas was serving as Surgeon General of the army when we entered the World War. How quickly and efficiently he organized the medical department of the army astonished not only our people, but the people of all nations. The confidence reposed in him by the people and the profession, and his profound knowledge of the conditions and needs of the army, were the chief factors in such an efficient organization and made possible the excellent results obtained by our medical department in the great war.

Gorgas several years ago visited the Rand Mines, in southeast Africa, for the British Government, to study and report on the black water fever and pneumonia among the miners of that section. His report is treasured by the British Government as a classic and his suggestions very materially reduced the death rate in that country. He was on his way to fill another mission for England, that of studying and reporting on the fevers of the west coast of Africa, when stricken with paralysis, in Belgium. He was carried to London and was treated by the best talent of that city, but succumbed.

Dr. Gorgas was honored and revered by the

people of the entire world. He did more to prevent diseases and suffering of the human family than any other man who ever lived. One of the large London dailies, in writing an obituary of Gorgas, paid him the distinct compliment of being the family physician of the world. When a dreaded pestilence would visit any part of the world and take its people off like flies, the immediate cry was, "Let's send for Gorgas." The profession in Alabama and the South has reached its culmination in Gorgas, Alabama's native son. At the last meeting of the State Medical Association of Alabama, a resolution was unanimously passed to place the statue of Gorgas in the Hall of Fame in Washington.

In this connection, I will briefly mention the work of Walter Reed, of Virginia, as the head of the Yellow Fever Commission, in Cuba, that proved conclusively that yellow fever was transmitted by the bite of a mosquito. This idea had been suggested by Carlos Finley, a Cuban doctor, but it remained for this Commission, headed by Major Reed, to establish this fact by actual experimentation. The United States Government has honored Reed's memory by naming a large hospital at Washington, D. C., The Walter Reed Hospital.

Joseph Holt, Health Officer of Louisiana for a number of years, devised a quick and efficient method of disinfecting ships. He did more for commerce and prosperity of the country than any other man. The adoption of Holt's method was a great saving in time and millions of dollars to the shipping interests every year. The South has assumed the leading role in matters pertaining to sanitation.

Malaria is wide-spread over a large section of the world. It is claimed by experts that the conquering soldiers of Alexander the Great carried malaria back to Macedonia and Greece and that this disease was responsible for the decadence and decline of ancient Greece. The same authorities claim that the Roman soldiers, returning from the overthrow and destruction of Carthage, came home infected with the malarial parasite and that malaria was the cause of the downfall of Imperial Rome.

Malaria has overthrown governments and changed the trend of history and has no doubt hampered the prosperity of our Southland more than any other cause. But Charles C. Bass, of New Orleans, has suggested a simple

and very efficient method of treatment with quinine that will finally eliminate malaria from our section of the country, and the entire world, provided this treatment is persistently carried on and followed up where any outbreaks of malaria occur. Dr. Bass was the first experimenter to grow malarial parasites in test tubes.

Dr. Rudolph Matas, an alumnus of Tulane University, has been Professor of Surgery at Tulane a number of years and is identified with the profession in the South. He created a great deal of enthusiasm among the surgeons of the world by his original operations on the vascular system and has opened up broad fields for speculation and thought by this work. His name will be transmitted down to posterity on account of his operation on aneurysms. Matas is one of the leading general surgeons. Dr. L. L. Hill said of him, "His mind is like the ocean, the waves of which touch the surgical thought of every question of his day."

Matas' most practical work was giving to the profession conductive anesthesia (i. e., nerve blocking). This is second only to Long's discovery of ether anesthesia. A great deal of general surgery is done under local anesthesia now and conductive anesthesia is, indeed, the greatest boon ever offered the dental profession.

L. L. Hill, of Montgomery, Alabama, scholar and surgeon, is due the consideration of the profession for his scholarly attainments. Dr. Hill has done three successful operations on the human heart—this is probably the world's records,—suturing the heart, removing a piece of darned needle three-fourths of an inch long from the heart, removing a cambric needle from the heart—all these patients making uneventful recoveries. The University of Alabama, in recognition of his great skill in operating on the heart, conferred on him the degree of LL. D.

The poor white trash of the South have always been ridiculed by the better-to-do whites, and all the negroes. They have been looked upon with disdain, as being indolent, shiftless, etc. Their pitiable condition was thought to be inherent. The first physician to take this subject up and give it the needed study, was Dr. H. F. Harris, of Atlanta, Georgia. He showed conclusively that the hookworms were responsible for this condition and advised treatment. He said that these unfortunate

people could be made healthy and that the peach glow could be put in the cheeks of the boys and girls of these so-called indolent white trash, and that they could be made useful citizens of our country. The United States Government experts have confirmed the work of Harris. Much good has been done and many people in our Southern country have been reclaimed from poverty. If the proper efforts are continually put forth, the hookworms can be entirely eradicated from our country.

Abraham Flexner, a Hebrew, of Paducah, Kentucky, but now with the Rockefeller Foundation of New York City, has done a great deal by his discovery of the Flexner dysenteric bacilli and his serum for the treatment of this disease. His work on cerebrospinal fever and infantile paralysis, also the suggestion of the use of antimeningococcus serum in the treatment of cerebrospinal fever, entitles him to the consideration of the profession as one of the great minds of the world. Flexner's name will doubtless be written on one of the highest pinnacles in the Temple of Fame.

Dr. George B. Searcy, of Tuscaloosa, was the first to diagnose pellagra in this country; this was done at the Mount Vernon Insane Hospital for the negroes of Alabama, in 1906. Pellagra hung over the South like a mighty black pall for a number of years. Time is not sufficient in this short paper to go into the details of the discussions and work done on this subject. Goldberger, an Austrian by birth but in the United States service, conducted a number of experiments in Mississippi, that prove conclusively that pellagra is a nutritional disease and can be cured with a well balanced diet, and that people who subsist on a diet that contains all the elements of food, including a plenty of green vegetables and fruits, will not have pellagra. It has been shown later that vitamins play an important role. Goldberger's ideas, put into practice, will entirely eliminate pellagra from the face of the earth. Aside from this, the immense economical value of this work is beyond calculation for this section.

I can but barely mention the name and work of O. H. Schloss, of Eufaula, Alabama, who has suggested to the world the skin test for patients sensitive to foods containing a large amount of protein and especially milk, and methods of desensitizing these patients. This

is a new and radical departure from the beaten paths and promises much good.

These are, indeed, stars of the first magnitude. I could mention many men in our profession who shine with less luster and I could write a whole thesis on that vast army of general practitioners who have adorned the profession in the South like the milky way on a star-lit night, if time permitted. While all could not shine in the firmaments of the profession with the brightness of these greater stars, yet, after all, it was a great professional band of earnest workers from the bottom to the top that has culminated in producing in our section of the country the illustrious names I have mentioned.

THE DETERMINATION AND SIGNIFICANCE OF THE HYDROGEN ION CONCENTRATION*

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INTRODUCTION.

Life as we know it in this world is peculiarly dependent on water and on carbon. All life processes take place in water and most of the vital energy liberated is due to the oxidation of carbon. Because of this relationship, living matter, from the very first, has been in contact with and has been impregnated with carbonic acid. Now, carbonic acid and the acid carbonates have one almost unique property, namely they keep solutions neutral in reaction. Life has thus developed in a neutral medium and all its processes presuppose neutrality and are adapted to neutrality. Hence, any departure from neutrality makes trouble.

I can illustrate the ability of carbonic acid and the acid carbonates to maintain neutrality by data given in Henderson's book on the Fitness of the Environment. If we take one hundred litres of water containing one kilo of carbon dioxide and add sodium hydroxide in fifty gram portions, the reaction which at first is acid gradually becomes less and less acid as the fifty gram portions are added, gradually approaches the neutral point, and then passes it. The 150 grams that are added nearest the neutral point, part on one side and part on the other, increase the alkalinity from 0.7×10^{-7} to 1.7×10^{-7} or 2.4 times. If this same 150 grams of sodium hydroxide had been added to

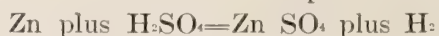
water it would have increased the alkalinity from $N/10^7$ to $N/26$ or 384,000 times, thus showing how the CO_2 prevents change in reaction—an increase in alkalinity. Or conversely, if we have one hundred litres of water containing one kilo of sodium bicarbonate, in equilibrium with an atmosphere containing one gram of carbon dioxide per litre, then on adding hydrochloric acid in fifty gram portions the reaction becomes less and less alkaline, gradually reaches, and finally passes the neutral point. The 150 grams HCl added nearest to the neutral point increase the acidity from 0.68×10^{-7} to 1.54×10^{-7} or 2.3 times. If the same 150 grams of HCl had been added to water it would have increased the acidity from $N/10^7$ to $N/24$ or 416,000 times. This shows how the bicarbonates prevent increase in acidity. The above variation from true neutrality produced in a solution of carbonic acid or an acid carbonate by adding 150 grams of either acid or alkali is much less than is found in good distilled water and less than we were able to even measure a few years ago.

Suppose one were to try to determine the reaction of either of these essentially neutral solutions by titration. You will see that all of the CO_2 or of the NaHCO_3 would react with the alkali or acid added until either it was all neutralized or until the particular hydrogen ion concentration had been reached at which the particular indicator you were using changed color. This brings out the difference between the real reaction, that is the hydrogen ion concentration and the titratable acidity or alkalinity. For the analytical chemist the titratable acidity is important but for most biological purposes the actual concentration of hydrogen ion, is the important thing.

THE DETERMINATION OF THE HYDROGEN ION CONCENTRATION BY ELECTRICAL METHOD.

THE CHEMICAL THEORY.

Why does zinc dissolve in sulphuric acid?



Chemists say the zinc displaces the hydrogen. Zinc will also displace various other metals when placed in solutions of their salts, for Ex. iron and silver. Zinc in turn is displaced by magnesium and by potassium. (K, Mg, Zn, Fe, H, Cu, Ag). When tested out in this way the elements can be arranged in a series of decreasing displacement value so that any element will displace those below it in the series.

*Read and demonstrated before the Richmond Pathological Society.

Why are the elements thus displaced?

There is no adequate answer to this question but all the elements seem to have a tendency to go into solution: some have a greater tendency than others. Suppose that there is but one sulphate ion and a copper and a zinc ion are competing for it. The zinc has a greater tendency to go into solution and combine with the SO_4 ion and so the copper is forced out of solution and is deposited as metallic copper. So the elements and especially the metals are said to have a solution pressure or tension. This is a very anthropomorphic and inadequate explanation but nevertheless it is the best we have.

If a zinc bar be immersed in a solution of ZnSO_4 , the zinc bar because of its solution pressure sends zinc ions out into the solution. The zinc ions already in solution have a pressure corresponding to a gas pressure and usually called osmotic pressure. By this pressure they tend to deposit on the zinc bar and an equilibrium between the bar and the solution will be established when as many ions go out from the bar in unit time as deposit on it from the solution. This would be in some particular concentration of the solution.

When a zinc ion goes out from the bar into the solution it carries with it a positive charge of electricity. This makes the solution into which it goes just so much more positive and leaves the bar just so much more negative. As the zinc ions continue to go out into the solution, the zinc bar becomes more and more negative and the solution more and more positive. In this way there is built up an electrical potential between the bar and the solution.

As the bar becomes more and more negative and the solution more and more positive, it becomes increasingly difficult to send positive ions out into a positive solution and to separate positive ions from a negative bar because of the attraction of unlike charges and the repulsion of like charges. The zinc bar also attracts back to itself more and more the positive zinc ions in the solution.

By these two factors, the original concentration of the solution and the potential developed, a condition of equilibrium is soon established. You will readily see that the greater the original concentration of the solution, the less will be the potential developed, because fewer zinc ions will have to be sent out before equilibrium is reached.

In this way, the amount of potential that

will develop depends on the original concentration of the zinc ions or conversely, the potential that develops can be used as a measure of the concentration of zinc ions originally in the solution. As a matter of fact, a zinc bar in a normal solution of zinc sulphate develops a potential of just about one-half a volt; the zinc bar being negative.

On the other hand, if a copper bar be plunged into a normal solution of copper sulphate, the solution pressure of the copper bar is less than the deposition pressure of the copper ions in the solution. The process is reversed, and so the copper ions tend to deposit on the bar until equilibrium is established. This also develops a potential between the bar and the solution but in this case the polarity is reversed, the bar is positive and the solution is negative. The voltage in this case is also about one-half volt; the bar being positive.

Now, if two such cells, zinc in zinc sulphate and copper in copper sulphate, be separated by a porous partition and the bars be connected across, a current will flow. This is the ordinary Daniell Cell that we learned about in physics. In this case the potential of each side being about one-half volt and of opposite signs the voltage of the combination is one volt.

Or, if we have a double cell so arranged that two zinc bars dip into two solutions of zinc sulphate which are separated by a porous partition, then if one solution is more dilute than the other, a higher potential will develop on that side and a current will flow. The current potential in this case will be the difference between the potentials of the two sides. This is the ordinary concentration cell.

All this is true not only of zinc and of copper but of all the metals generally, including hydrogen. If a bar of hydrogen be immersed in a solution of one of its salts, say hydrogen sulphate, a potential develops equal to about 0.28 volt; the hydrogen being positive.

If two such cells of different concentration be separated by a porous partition, a current will flow. If the potential of one side be known, the potential of the other can be calculated.

Hydrogen is, of course, of gas and so cannot be shaped directly into a bar, but advantage is taken of the well known ability of platinum black to condense or absorb large quantities of hydrogen on itself. Platinum black is deposited by reduction on a platinum

electrode; this is then saturated with hydrogen gas, and serves as a hydrogen electrode. Two of these electrodes plunged into acids of different hydrogen ion concentration will give a current when electrical connections are established.

Now, you will see that what we measure with a hydrogen electrode, the factor which determines the amount of potential, is the concentration of hydrogen ions in the solution.

This is not the same as the amount of acidity as determined by titration, with an alkali. For Ex. sodium bicarbonate as you well know is slightly alkaline in reaction and yet it will absorb almost one-half its weight of sodium hydroxide when titrated with an alkali.

NaHCO_3	NaOH	Na_2CO_3	H_2O
87	40		

Again, by varying the proportions of NaH_2PO_4 and of NaHPO_4 , a solution can be made acid, alkaline, or neutral, and yet any one of these mixtures will absorb considerable quantities of either acid or alkali when titrated. Such solutions are spoken of as buffered and all the fluids and tissues of the body are so buffered. These body fluids are buffered, not only by the acid carbonates and phosphates but also by the proteins themselves.

Demonstration: Of how much more alkali is required to turn phenolphthalein in one per cent peptone solution than in water. One drop turns it in ten c. c. of water, while nearly two c. c. are required to produce the same color in ten c. c. of one per cent. peptone solution.

THE INDICATOR METHOD.

Hydrogen ion concentration can be determined approximately by the use of indicators. If to a series of tubes containing one per cent. of peptone, neutral in reaction, I add litmus and then increasing amounts of alkali and decreasing amounts of acid, I shall have a series that is blue at one end, red at the other, and graded in color between. The color of the litmus is a direct index to the hydrogen ion concentration in the tubes. If the hydrogen ion concentration of each tube be determined electrically and the tubes be so labeled, then we shall have a set of standards by which the hydrogen ion concentration of any unknown, within this range, can be determined. To do this we would add litmus to the unknown and then compare the color with this series.

Such series have been made but usually not with litmus as it does not keep well. Many new and valuable indicators have been pro-

duced in recent years that change color at various points. By making up several sets from carefully selected indicators quite a range can be covered. For example:

Brom-phenol blue covers a range from Ph.....	3. to 4.6
Methyl red covers a range from Ph.....	4.4 to 6.0
Brom-cresol purple covers a range from Ph.....	5.4 to 7.0
Brom-thymol blue covers a range from Ph.....	6.0 to 7.6
Phenol red covers a range from Ph.....	6.6 to 8.2
Cresol red covers a range from Ph.....	7.2 to 8.8
Thymol blue covers a range from Ph.....	8.2 to 9.8

Demonstrate use of comparator block.

Demonstrate Standard Sets of Indicators.

THE ARITHMETICAL EXPRESSION OF THE HYDROGEN ION CONCENTRATION.

Something should now be said, perhaps, about the expressions used in indicating the hydrogen ion concentrations.

We all know that in a normal solution of an acid there is one gram of acid hydrogen. If all this hydrogen were ionized we would have a normal solution of hydrogen ions. Hydrogen ion concentrations are expressed as fractions of this hypothetical normal solution. For example, we speak of $1/5$ normal, of $1/100$ normal, or more simply as $N/5$ or $N/100$.

Dilute solutions run into several figures so $N/1000$ is often written as $N/10^3$ or more simply as 10^{-3} . The hydrogen ion concentration of pure water or the neutral point is one ten millionth normal or $N/10^7$ or 10^{-7} . Twice this concentration would be 2×10^{-7} and one-fourth this concentration would be 0.25×10^{-7} . These are rather unusual and awkward numbers to hold in mind or to work with and so it has become customary to write simply the logarithm of the denominator when the concentration is written as a fraction.

For example,

$N/5$ is Ph 0.7

$N/10$ is Ph 1.0

$N/100$ is Ph 2.0

$N/10^7$ is Ph 7.0

When Ph is written other than as a common fraction it may be converted to a fraction and then the log. of the denominator looked up. For example,

2×10^{-7} or $2 \times N/10^7 = 2N/10,000,000 = N/5,000,000 = \text{Ph } 6.7$.

$0.25 \times 10^{-7} = 0.25N/10,000,000 = N/40,000,000 = \text{Ph } 7.6$

See the conversion tables.

In the actual testing of an unknown by the electrical method, it is not convenient to use two hydrogen electrodes because the known

side is not sufficiently constant and accurately known. Usually, a calomel electrode is used because it is convenient and of constant voltage. In this case the gas chain formula would be



By suitable electrical equipment, the resulting voltage can be measured and the difference between this and the voltage of the Calomel Electrode gives the potential of the unknown and from this the hydrogen ion concentration can be calculated.

Proceedings of Societies

PRELIMINARY PROGRAM

Twenty-fourth Annual Session

of the

Tri-State Medical Association

of the

Carolinas and Virginia.

Norfolk, Virginia.

February 22-23, 1922.

OFFICERS—SESSION 1922.

Dr. W. W. Fennell, Rock Hill, S. C. President
Dr. J. T. Burruss, High Point, N. C. Vice-President
Dr. H. R. Black, Spartanburg, S. C. Vice-President
Dr. Karl S. Blackwell, Richmond, Va. Vice-Pres.
Dr. James K. Hall, Richmond, Va. Secy.-Treas.

EXECUTIVE COUNCIL

One Year Term

Dr. F. C. Rinker, Norfolk, Va.
Dr. W. O. Spencer, Winston-Salem, N. C.
Dr. Julius H. Taylor, Columbia, S. C.

Two Year Term

Dr. W. L. Peple, Richmond, Va.
Dr. J. P. Matheson, Charlotte, N. C.
Dr. Chas. A. Mobley, Orangeburg, S. C.

Three Year Term

Dr. J. T. McKinney, Roanoke, Va.
Dr. C. O'H. Laughinghouse, Greenville, N. C.
Dr. D. L. Smith, Spartanburg, S. C.

LOCAL COMMITTEE OF ARRANGEMENTS

Representing the Norfolk County Medical Society

Dr. Southgate Leigh, Chairman
Dr. W. E. Driver
Dr. M. N. King.
Dr. Jas. W. Hunter,
Dr. F. D. Wilson,
Dr. G. B. Byrd.

Representing the Chamber of Commerce and the Board of Trade

Mr. F. R. Ford,
Mr. A. P. Long,
Mr. W. A. Parker,

Mr. R. D. Davis,
Mr. Chas. McDermott,
Mr. N. S. Horton.

PRELIMINARY PROGRAM

Wednesday, February 22, 10 A. M.

Place of Meeting: Monticello Hotel.

The Association will be called to order by Dr. Southgate Leigh, Chairman of the Committee of Arrangements.

Invocation—The Right Rev. Beverley D. Tucker, Bishop of Southern Virginia.

Address of welcome on behalf of the City—Hon. A. L. Roper, Mayor of Norfolk.

Address of welcome on behalf of the Norfolk County Medical Society—Dr. C. J. Andrews, President of the Norfolk County Medical Society.

Response—Dr. Frank M. Lander, Williamston, S. C.

President's Annual Address—Dr. W. W. Fennell, Rock Hill, S. C.

PAPERS

"Duodenal Ulcer and Cholecystitis." By Dr. Warren T. Vaughan, Richmond, Va.

"Acute Perforation of Duodenal Ulcer." By Dr. George H. Bunch, Columbia, S. C.

"The Spleen in Surgery." By Dr. Carrington Williams, Richmond, Va.

"The Treatment of Chronic Empyema." By Dr. F. S. Johns, Richmond, Va.

"Repeated Perforations of the Small Intestine of Undetermined Origin." By Dr. S. S. Gale, Roanoke, Va.

"Surgical Research." By Dr. John B. Deaver, Philadelphia, Pa., (Invited Guest).

"Some Points of Differentiation Between Kidney and Intra-Abdominal Lesions." By Dr. A. J. Crowell, Charlotte, N. C.

"Torsion of the Spermatid Cord; with Gangrene of Testicle. Case Report." By Dr. Hamilton W. McKay, Charlotte, N. C.

"The Differential Diagnosis of Some States of Torpidity." By Dr. Tom. A. Williams, Washington, D. C.

"Pertinent Considerations in Hypertension." By Dr. W. W. Silvester, Norfolk, Va.

"The Treatment of High Blood Pressure." By Dr. Garnett Nelson, Richmond, Va.

"Reconstruction Surgery." (Illustrated by Lantern Slides and Moving Pictures). By Dr. F. H. Albee, New York, N. Y. (Invited Guest).

"Therapeutic Impressions." By Dr. Ivan P. Battle, Rocky Mount, N. C.

"Reflections on Medical Ethics." By Dr. Davis Furman, Greenville, S. C.

"Some Further Observations and Reports of Cases in the Instillation Treatment of Enuresis in Childhood." By Dr. William R. Barron, Columbia, S. C.

"Group or Rather Co-operative Practice." By Dr. J. E. Rawls, Suffolk, Va.

"Torsion of Appendices Epiploicae—Case Report." By Dr. Samuel Orr Black, Spartanburg, S. C.

"Cancer Propaganda." (Illustrated with lantern slides and moving pictures). By Dr. J. W. Long, Greensboro, N. C.

"The Course of Recovery Following Operation for Permanent Facial Paralysis." (Lantern slides). By Dr. C. C. Coleman, Richmond, Va.

"The Surgical Treatment of Facial Neuralgia."

- (Lantern Slides.) By Dr. Addison G. Brenizer, Charlotte, N. C.
- "The Relation of Modern Dentistry to the Practice of Medicine." (Lantern Slides.) By Dr. Guy R. Harrison, Richmond, Va. (Invited guest.)
- "Blood Pressure in Pregnancy." By Dr. J. N. Upshur, Richmond, Va.
- "Auto-Transfusion." By Dr. Charles S. White, Washington, D. C.
- "Sarcoma of the Long Bones." By Dr. James W. Gibbon, Charlotte, N. C.
- "Increasing Use of Narcotic Drugs by Members of the Medical Profession." By Dr. W. C. Ashworth, Glenwood, N. C.
- "Psychoanalysis." By Dr. W. A. White, Washington, D. C. (Invited Guest.)
- "The Value of Psychoanalysis to the General Practitioner." By Dr. Louis E. Bisch, Asheville, N. C.
- "Rambling Remarks in Re Appendicitis." By Dr. Stuart McGuire, Richmond, Va.
- "Headaches with Especial Reference to Those Due to Sinus Infection." By Dr. H. C. Shirley, Charlotte, N. C.
- "Don't Convict your Patient on Circumstantial Evidence." By Dr. Lesesne Smith, Spartanburg, S. C.
- "Some Disturbances of Pernicious Anaemia other than Blood Changes." By Dr. Henry A. Christian, Boston, Mass. (Invited Guest.)
- "Report and Discussion of Urological Cases (Polycystitic Kidney)." (Lantern Slides.) By Dr. N. Bruce Edgerton, Columbia, S. C.
- "Management of Urological Cases." By Dr. Joseph F. Geisinger, Richmond, Va.
- "Uretero-Pyelography." (Lantern Slides.) By Dr. Stanley H. Graves and Dr. S. B. Whitlock, Norfolk, Va.
- "Neoplasmata of the Clitoris." By Dr. Frank D. Worthington, Charlotte, N. C.
- "Nitrous Oxide-Oxygen, Analgesia and Anaesthesia in Obstetrics." By Dr. G. Bentley Byrd, Norfolk, Va.
- "Tuberculous Joints." By Dr. Alonzo Myers, Charlotte, N. C.
- "A Study in Pericarditis." By Dr. W. B. Porter and Dr. F. M. Hodges, Richmond, Va.
- "The Value of Early Exploration in Obscure Intra-Abdominal Conditions." By Dr. D. T. Tayloe, Washington, N. C.
- "Surgery and the Haemophiliac." By Dr. J. H. Taylor, Columbia, S. C.
- "The Tax-Supported Doctors' Propaganda for Socialized Medicine." By Dr. M. Eugene Street, Glendon, N. C.
- "A Criticism of the Prohibition Law." By Dr. R. E. Hughes, Laurens, S. C.
- "Practical Use of Current Medical Literature." By Dr. M. L. Townsend, Charlotte, N. C.
- "The Surgical Significance of Pain in the Left Side of the Abdomen." By Dr. R. L. Pittman, Fayetteville, N. C.
- "Silent Stones: Report of Cases." By Dr. W. Lowndes Peple, Richmond, Va.

Information.

Norfolk is abundantly supplied with first-class hotels. The Monticello Hotel will be headquarters of the Association. There are also other hotels, as follows: The Lorraine, the Southland, the Fairfax, the Atlantic and the Victoria.

The Association may tax the hotels to their capacity, and you should reserve a room at once.

Arrangements have been made for lantern slide work, and a competent operator will be on hand,

consequently any paper may be illustrated if the author will furnish the slides.

The members of the Association will be entertained as well as instructed at the meeting, but the entertainment features will be announced later. All members who wish to bring their wives and daughters with them to Norfolk may feel assured that they will be most cordially welcomed by the wives of the Norfolk physicians.

Members of the Tri-State will recall the royal welcome Norfolk has extended to us in the years gone by.

The serious business of the meeting, however, is the discussion of medical problems, and the hope is entertained that the author of each paper on the program will immediately take steps looking to the prompt and thorough discussion of the thesis which he presents. The secretary would like to suggest to each author that he send a copy of his paper to some fellow-member for the purpose of having the member initiate the discussion of the subject. It is earnestly hoped that the discussions may be prompt, and lively and thorough. The program is short, but comprehensive, and there will be ample time for adequate discussion.

There are many reasons for believing that the coming meeting will be the largest and the best the Association has ever known. The former presidents all promise to meet with us again, as they did last year at Spartanburg.

A few invited guests of world-wide reputation will address the Association. Come to the meeting, and bring some of your medical friends along. All good physicians will be welcomed to all the sessions.

At the last meeting of the Association the secretary was authorized to limit the program to forty papers. He has taken the liberty of excluding from this number the Presidential Address and the papers presented by invited guests. The program, therefore, stands in complete form. If there are errors or omissions please communicate at once with the secretary.

Section 9: "Not more than twenty minutes will be occupied in reading any paper, except by a vote of the Association. In the discussion of papers, resolutions or questions, no member shall speak longer than five minutes nor more than twice on the same subject, except on special permission by a vote of the Association."

Space will be provided for the exhibition of ethical goods. Exhibitors should communicate at once with the Local Committee of Arrangements.

For further information call freely upon Dr. Southgate Leigh, Norfolk, Virginia, or

JAS K. HALL, M. D., Secretary-Treasurer,
Rock Hill, S. C.

The Association of Seaboard Air Line Railway Surgeons

Celebrated their last annual meeting by a trip to Cuba, November 27 to December 2, and transacted all business on boat. It was decided to hold the next annual meeting in Norfolk, Va., and the following officers were elected: President, Dr. V. A. Brooks, Portsmouth, Va.; vice-presidents, Drs. A. G. Fort, Atlanta, Ga., L. A. Hartzog, Olar, S. C.; and secretary-treasurer, Dr. J. W. Palmer, Ailey, Ga.

Northampton County Medical Society.

At a recent meeting of this Society at Eastville, Va., the following officers were elected: President, Dr. Holland Trower, Eastville; vice-president, Dr. G. Fred Floyd, Bridge-town; secretary-treasurer, Dr. J. Mortimer Lynch, Cape Charles.

Dinwiddie County Medical Society.

The following doctors were elected members of the Dinwiddie County Medical Society at its December meeting: Drs. H. G. Turner, William A. Reese, and Mason Romaine, all of Petersburg.

WILLIAM C. POWELL, *Sec'y-Treas.*

The Lunenburg County Medical Society,

At its regular quarterly meeting, held in Kenbridge, January 12, elected the following officers: President, Dr. Edwin Mann, Kenbridge; vice-president, Dr. H. E. Whaley, Victoria; secretary-treasurer, Dr. Robert Whitehead, Meherrin.

Analyses, Selections, Etc.

Primary Carcinoma of the Female Bladder, With Report of a Case.

Dr. I. S. Stone, of Washington, in a paper read before the Southern Surgical Association at Pinehurst, N. C., in December, reported a case in which early excision of a supposedly malignant bladder tumor, by combined vaginal and abdominal operations, has resulted in an apparent cure.

CASE REPORT.

Miss, white, 63, single and virgin, came to see me in February, 1920, on account of an irritable bladder with bloody urine. She had always been healthy since childhood, weighed 150 pounds, had the appearance of good circumstances and had no vices. At the time of her visit she was passing bloody urine every day, which she thought uninfluenced by exercise. After she came under observation, we always found blood in specimens examined microscopically. She had not had any severe or alarming hemorrhage at any time. Blood examination showed 80 per cent. haemoglobin and no constitutional disease, with blood pressure 130 systolic. Her urine was normal apart from the usual epithelium, shreds and ele-

ments from the growth in the bladder. Pelvic examination gave little information. It was discovered that she always had residual urine in her bladder, generally about two ounces. With a Kelly cystoscope, a mass near the left ureteral orifice could be seen. This had a ragged surface and was dark red in color, which easily accounted for the bloody urine and irritable bladder. She had not suffered severe pain but was obliged to empty her bladder at intervals of a few hours. This circumstance I now believe was partly due to the inability to completely empty the organ. (Incidentally her bladder capacity was somewhat limited, being about ten ounces.) My colleague, Dr. G. Brown Miller, examined the patient at my request and gave an unqualified opinion that we had to deal with a malignant growth. He advised operative treatment.

The growth as seen through the cystoscope appeared to be about two centimeters vertically and not as wide as it was long. It was placed immediately adjoining the ureteral orifice, being rather more above than below that point. The outline was in sharp contrast to the adjoining mucosa, being abruptly projected out from the bladder wall, which was practically of normal appearance. The growth was sessile and answers well to the description of papillomatous carcinoma.

Preliminary Treatment.—In order to sterilize the mucosa as well as possible, a 2 per cent. solution of protargol was thrown in the bladder on alternate days for a time, the same treatment as that used in cases of chronic or persistent cystitis. It was seen that distention of the organ beyond a certain point always caused pain and increased bloody return.

The first steps of the operation were rather tedious, owing to the small size of the vagina. However, the anterior vaginal wall was opened in the median line and the bladder carefully and thoroughly separated from all attachments at its base, especially on the left of the median line and from the anterior surface of the uterus, an easy matter to those accustomed to the performance of vaginal hysterectomy or an interposition operation. The region about the ureter was thus investigated, the growth located, and its size estimated. Then the abdomen was opened and the operation completed from above.

I wish particularly to call attention to the ease with which the operation was completed after the base of the bladder was freed. We

could raise the organ considerably above its usual position and there was no special delay in the excision of the growth, as the ureter was easily brought into view. In this case the ureter was displaced slightly, but not entirely separated from its lateral attachments, and was sutured in position as the wound was closed. A line of small plain catgut sutures closed the bladder and were tied on the inside. A second row of number two catgut was added on the outside but under the peritoneal cover. A drain tube provided with fenestra was sutured to the anterior wall of the uterus and brought into the vagina to act in case of leakage, possible infection or hemorrhage. As a matter of fact, there was need of this which we did not expect, for a small amount of urine escaped through it for more than a week. A self retaining catheter was placed in the bladder. Although this catheter was doubtless retained within the bladder it is almost a certainty that its lumen was allowed to get closed and the leakage was due to that mishap. However, there was at no time any serious delay in the patient's recovery. Complete and satisfactory wound closure proceeded rapidly and without infection. The bladder functionated satisfactorily in ten days.

The wound in the bladder extended from the apex to a point well below the left ureteral orifice and the growth excised with scissors, leaving a good margin of healthy tissue outside of the involved area. The pathologist of the hospital reported an epithelioma. No treatment was required for cystitis and, although the patient has been kept under my observation for a year and eight months, no untoward symptom has occurred and her urine is normal. (*Am. Jour. Obst. & Gyn.*)

Correspondence

Tuberculin Testing of Dairy Cows:

Lynchburg, Virginia,
January 19, 1922.

TO THE EDITOR:—

In a communication to the January issue of the VIRGINIA MEDICAL MONTHLY on my paper before the State Medical Society, Dr. P. S. Schenck, Director of Public Welfare and Health of Norfolk, misconstrues my statement regarding the tuberculin testing of cows. I did not state that Lynchburg had the first ordinance on tuberculin testing of dairy cows.

What I did state was that Lynchburg was the first city to drink milk *all* of which came from tuberculin tested cows. When the Lynchburg ordinance was written, the health officials had before them a number of municipal ordinances requiring that milk *sold* in the city had to be drawn from tuberculin tested cows, or had to be pasteurized. The Lynchburg ordinance went further and required in addition to the dairy cows outside of the corporate limits that all cows, private as well as public, kept in the city, whether the owners sold milk or not, had to be tested. The theory was that from a public health view point it was as important to have the milk used by the owner of the family cow free from tuberculosis as to have that sold to other persons. Pasteurization at that time in the city was unsatisfactory and, therefore, was not accepted as a substitute for testing. The result was that all cows from which milk was drawn for use in Lynchburg were tested. What is more and what is of very great importance, the testing was checked up by government experts, and thus much unreliable work by private veterinarians was avoided as many other cities of the country and even of Virginia have found out.

I note with interest and surprise the statement of Dr. Schenck that Norfolk adopted an ordinance requiring tuberculin testing in March 1901. Bulletin No. 46, Bureau of Animal Industry, United States Department of Agriculture, of date 1903, two years later, page 159 states:

"Norfolk. (Population, 46,624).

"(For comparison with other cities in Class III, see p. 38.)

"A. P. Pannill, secretary of the board of health.

"This city has no milk ordinance and no milk inspector, and does not exercise supervision over the milk supply," and on page 38 says in reference to Norfolk, "No inspectors and no records; can get no facts."

S. H. ROSENTHAL, M. D.

Washington, D. C.

1124 New Hampshire Ave.

January 21, 1922.

TO DR. MOSBY G. PERROW,

DIRECTOR OF PUBLIC WELFARE,

LYNCHBURG, VA.

The statement appearing in the December issue of the VIRGINIA MEDICAL MONTHLY to

the effect that "Lynchburg was the first city to drink milk all of which came from tuberculin tested cows" was a true statement of fact. At the time of applying the tests at Lynchburg, Dr. T. A. Ladson, now in charge of work in the State of Maryland, assisted me. About two years later, Drs. Benner and Van Ness, Bureau Inspectors, commenced working at Norfolk, and Newport News, and Dr. Van Ness reported some very interesting experiences in that section. Lynchburg was beyond doubt the pioneer city of America to eradicate the disease from its herds, and the co-operation between your city, the breeders and owners of cattle, and the Bureau was remarkably satisfactory, as was the general co-operation in Virginia generally. Dr. Rosenthal's article is highly appreciated by me.

(Signed) FRANK I. WINANT,
Veterinarian, Bureau of Animal Industry.

The Truth About Medicine

During December the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

- The Abbott Laboratories:
Neocinchophen-Abbott.
- Powers-Weightman-Rosengarten Co.:
Mercury and Potassium Iodide—P. W. R. Schimmel and Co.
- Oil of Cypress-Schimmel and Co.
- E. R. Squibb and Sons:
Liquid Petrolatum-Squibb.
- Food Allergens-Squibb.
- Pollen Protein Allergens-Squibb.
- Animal Epidermal Extract Allergens-Squibb.
- Bacterial Allergens-Squibb.
- Winthrop Chemical Co.:
Chaulmestrol
- Nonproprietary Article:
Chaulmoogra Oil.

Change of agency: Cresatin.—The council has directed that the description of Cresatin (New and Non-official Remedies, 1921, p. 94) be revised to show that the name has been changed to Cresatin—Dr. N. Sulzberger, and that it is manufactured by the Intravenous Products Company of America, Inc.

Book Announcements

The Blood Supply of the Heart. In Its Anatomical and Clinical Aspects. By LOUIS GROSS, M. D., C. M., Douglas Fellow in Pathology, McGill University, and Research Associate, Roval Victoria Hospital, Montreal, with an introduction by HORST OERTEL, Strathcona Professor of Pathology, McGill University, Montreal. Paul B. Hoeber. New York. Large 8vo. 171 pages. With

29 full plate illustrations and 6 text illustrations. Cloth. Price, \$5 net.

The Glands Regulating Personality. A Study of the Glands of Internal Secretion in Relation to the Types of Human Nature. By LOUIS BERMAN, M. D., Associate in Biological Chemistry, Columbia University; Physician to the Special Health Clinic, Lenox Hill Hospital, New York. The Macmillan Company. 1921. Cloth. 8vo. 300 pages.

Medical and Surgical Reports of the Episcopal Hospital of Philadelphia. Edited by ASTLEY P. C. ASHHURST, M. D., Vol. V. Philadelphia. Press of William Dornan. 1920. 506 pages. Cloth.

Ephraim McDowell, "Father of Ovariectomy" and Founder of Abdominal Surgery. With an Appendix on **Jane Todd Crawford.** By AUGUST SCHACHNER, M. D., F. A. C. S., Louisville, Ky. Philadelphia and London. J. B. Lippincott Company. 1921. 8vo. 331 pages. Cloth. Price \$5.00.

Cosmetic Nostrums and Allied Preparations. Part I, Preparations for the Skin. Part II, Preparations for the Hair. Part III, Deodorants, Depilatories, etc. 46 pages.

"Deafness Cures." 43 pages. Both of these pamphlets are issued by the PROPAGANDA DEPARTMENT of the JOURNAL OF THE A. M. A., as part of its work in giving the public the facts regarding the nostrum evil and quackery. Paper, 15 cents each.

New Hospital at Beckley, W. Va.

The King's Daughters' Hospital was opened at Beckley, W. Va., January 24, for the admission of patients. At present it can accommodate forty patients. The new building, which is of native stone and is modern in every respect, will accommodate 75 patients. It will have full time laboratory technicians and, in every respect, will come up to the standard required by the National Hospital Association.

Dr. B. B. Wheeler, former surgeon of McKendree Hospital, McKendree, W. Va., and for five years chief surgeon of the C. & O. Hospital, at Clifton Forge, Va., is surgeon and chief of the staff.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for consulting public health nurse, applications to be received until March 7, 1922; for supervisor of protective social measures, and field agent in protective social measures, applications to be received until further notice. Examinations are open to both men and women. Full information should be obtained from above named commission.

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Editorial

Quinidin Sulphate in Auricular Fibrillation.

Hewlett and Sweeney¹ conclude: (1) Quinidin will restore a normal heart rhythm in a certain proportion of auricular fibrillation; (2) recent onset of the fibrillation favors restoration of a normal rhythm; (3) with a return to normal rhythm, the general condition of the patient is generally improved, and occasionally there is a striking improvement even when digitalis has failed to maintain compensation; (4) on the other hand, quinidin may, in certain cases, produce alarming symptoms and may, during administration, have an unfavorable influence on compensation; (5) in view of the possible dangers associated with its administration to cardiac patients, quinidin should be given only after decompensation has been treated by other methods, after an exact diagnosis of the cardiac condition has been made, and when the patient is kept under careful observation; (6) combinations of quinidin and digitalis should probably be avoided.

It is thought by Oppenheimer and Mann² that quinidin acts by depression of irritability and of conduction in the fibrillating auricle and, thus, tends to lessen the frequency and complexity of auricular fibrillatory contractions. In this manner, normal rhythm may result. It would seem that this view has corroborative evidence in the observation that fibrillation

usually appears in hearts of increased irritability and rate.

It is rather accepted clinically that quinidin often restores to normal rhythm perpetually irregular hearts. How much the patient is really benefited by this restoration is a matter somewhat under discussion. It is quite true that the improvement of these cases may depend upon the essential nature of the cardiac defects producing or associated with the fibrillation. Cases resulting from strain or toxemia are more favorable for a permanent improvement than cases having underlying causes of a fixed nature, as valvular defects, arteriosclerosis and myocardial changes. Nevertheless, this drug seems (1) to exert a regulating effect on auricles and in this way favors the forcing of blood to the ventricles, (2) tends to cause the auriculo-ventricular valves to be in better position for closure at the beginning of ventricular contraction, (3) and causes the ventricular musculature to be under slightly increased tension at the moment of contraction, thus insuring optimal conditions for the propulsion of blood. This tends to bring about more regular systoles and, in turn, better ordered cardiac mechanism.

METHOD OF ADMINISTRATION: Because some patients are apparently unfavorably affected and because only a certain percentage of cases have been benefited, and because some have had decidedly bad results (fatalities having been reported), it is exceedingly important to proceed cautiously in its administration. In case of recognized auricular fibrillation, a preliminary small dose is recommended for the first dose. This may be 3 grains, three or four times the first day; after this, 6 grains, three times a day and increased to four times a day may be given. One should not give over thirty grains daily.

Untoward results may appear in the form of loss of appetite, slight nausea, vomiting, palpitation, increased heart rate, a small soft pulse, fainting, cyanosis, apnea. Fatality may occur; this is true in decompensated hearts.

Caution in the use of a new remedy is wise. The eagerness, with which a physician welcomes a new drug that comes into use with a reputation for controlling symptoms that have so long perplexed and harrassed him, is very

1 The Quinidin Treatment of Auricular Fibrillation; Hewlett & Sweeney. J. A. M. A., Dec. 3, 1921, p. 1792. (Vol. 77, No. 23.)

2 Clinical Experience with Quinidin in Auricular Fibrillation; Oppenheimer & Mann. J. A. M. A., Dec. 3, 1921, p. 1800 (Vol. 77, No. 23.)

natural, if it is wanting in true scientific poise and deliberation. The presentation of quindin as a heart drug with peculiar power upon the wild and delirious auricle rightly arrests attention. But caution in its use should be exercised and the proper cases for its application should be intelligently selected.

Bronchopneumonia.

The diagnosis of bronchopneumonia is not always easy in the early stages of the disease. The physical signs are not uniform. Radiograms of these cases show the reason for the variableness of physical signs. The presence of small discrete areas may not produce signs much at variance from those commonly elicited in bronchitis. The rales and relative variability of the breath sounds and the persistence of fever in bronchitis cases may be sufficient reason for expecting bronchopneumonia. As the advanced stages are met, one may be able to make out small areas of consolidation but, unless this condition obtains in the periphery, impairment of resonance and a clear cut alteration in the breath sounds may be difficult to obtain. Fleeting, migratory and changing physical signs may be expected as areas of lobular pneumonia proceed. The incidence of bronchopneumonia is common; more common than we are prone to think. Some of the cases of acute bronchitis that seem rather resistant to treatment are cases of bronchopneumonia. The patient with a persistent bronchial cold and fever is, not infrequently, a pneumonia with discrete areas. Some of these cases, not properly cared for or managed, may go on to a group of sequelae more or less serious and permanent. There may ensue from such cases pleurisy and emphysema, lung abscess, and the lighting up of a tubercular process previously quiescent.

In addition, one of the most serious and common complications relates to the effect upon the heart. The writer has frequently observed lamentable appearance of the symptoms of myocarditis in cases of bronchopneumonia, particularly cases not well protected in the post febrile stage. The appearance of breathlessness and the softening of the heart sounds, an occasional systolic murmur at the apex increased on exertion, may be evidence of a smitten heart muscle that has been thoroughly poisoned and that may never again return to normal strength or power of endurance.

Splenic Anemia: Banti's Disease.

Splenic anemia, or Banti's disease, is a condition that involves the blood, the spleen and the liver; there is a low red blood count, a low percentage of hemoglobin, and a leukemia; there is an enlarged spleen; and there is (as described by Banti in 1883) associated portal cirrhosis of the liver.

The clinical evolution is somewhat confused. Its etiology is not known. The classification of this disease is difficult because the history and physical findings in cases of splenic anemia and enlarged spleen often vary as to the initial symptoms and as to the order of appearing in the clinical picture. Mayo* has recently stated this point in this manner: "Most observers are now of the opinion that Banti's disease is merely a late stage of splenic anemia, presuming that the etiologic agents which are removed by the spleen from the blood stream affect not only the spleen but also the liver terminally. As we discover one by one the various initiating causes of these change in the spleen, the number of Banti's syndrome is reduced. Banti not only laid stress on unknown etiology but also on the terminal changes in the liver."

The anemia varies in degree. Following a gastric or esophageal hemorrhage, the red blood cells get as low as two million and the percentage of hemoglobin to 20%; during the quiescent stage, the red cells may go to, nearly if not, normal number, while the hemoglobin improves but does not reach normal. The count of white blood cells is usually low, one case in the service of the writer remaining constantly about 1,600 cells.

The spleen is enlarged, adherent, nodular, and hard. There is evidence of biliary cirrhosis; there may be ascites; they may be history of gastric hemorrhage and the patient appears to be pale and weak. Death is caused usually not by the hemorrhage but by portal and splenic circulatory obstruction and ascites. Heart failure ensues, if hemorrhage does not terminate the condition.

Dr. H. M. Miles

Has just returned to his home at Norton, Va., after doing special eye work at Knapp Memorial Eye Hospital, and ear, nose and throat work at Roosevelt Hospital, New York City.

*William J. Mayo, Jour. A. M. A., July 2, 1921.

News Notes

Influenza and Pneumonia.

Although New York city is experiencing an outbreak of pneumonia and influenza, there appears to be as yet no unusual prevalence of these diseases up-state, according to the reports reaching the State Department of Health of New York. Furthermore, telegraphic reports to the Department from several State health departments indicate that there is no epidemic of influenza or pneumonia in those states. It is true, however, that the reports from New York city show a considerable recent increase both in cases reported as influenza, and in cases and deaths from pneumonia, although the disease is of a milder type than the 1918 epidemic. Past experience shows that any marked increase of these diseases in New York city is likely to be followed within a short time by similar outbreaks in other communities. For this reason, health departments throughout the country are on the alert.

Through *U. S. Public Health Reports* we note that influenza is prevalent in several parts of England and is spreading. There, as in this country, the disease is of milder type than the 1918 epidemic. Broncho-pneumonia is reported as the chief complication. Outbreaks similar to that in England are reported also from continental Europe, and British authorities believe a further general spread is probable. According to German newspaper reports, hospital facilities in Berlin have been overtaxed with the care of influenza patients.

The Tri-State Medical Association of the Carolinas and Virginia

Is to hold its twenty-fourth annual session in Norfolk, Va., February 22nd and 23rd, under the presidency of Dr. W. W. Fennell, of Rock Hill, S. C. Dr. James K. Hall, of Westbrook Sanatorium, Richmond, Va., is secretary, and Dr. Southgate Leigh, Norfolk, Va., chairman of the Norfolk Committee of Arrangements. The program appears on page 663, under Society Proceedings. It is hoped that after reading the program you may decide to attend and, if not already affiliated, to become a member of the Association.

St. Louis Meeting of the American Medical Association.

The May meeting of the American Medi-

cal Association at St. Louis promises well toward being the largest in attendance of any of the Association's sessions. Since the publication of the hotels in the *Journal of the Association* in December, inquiries and reservations are being made daily. The hotels and the Convention's Bureau are aiding the Committee in a most satisfactory and helpful way to see that the fellows are comfortably housed and accommodated. The A. M. A. meetings tax all cities entertaining them to the limit of hotel capacity. Whenever possible, a good fellow should double up so that no one is left without comfortable lodging.

Reservations should be made by communicating direct with the hotels. If satisfactory arrangements cannot be made in this way, write to Dr. Louis H. Behrens, Chairman Committee on Hotels, 3525 Pine Street, St. Louis, Mo.

Bill Introduced Looking to Increase in Number of State's Rural Doctors.

Delegate Wilbur C. Hall, of Loudoun, has introduced in the House of Delegates, bills authorizing the boards of visitors of the Medical College of Virginia and the University of Virginia to offer two scholarships from each congressional district, which shall entitle the holder to tuition in the department of medicine of each institution and to \$250 annually. The bill provides that the scholarships shall be assigned, after competitive examination, to the two persons in each congressional district making the highest grades. The bills give each institution twenty scholarships.

It is further provided that each of the students after graduation shall practice medicine for a period of not less than five years in the rural section of the congressional district from which he or she was appointed, and if the person violates the agreement to practice medicine in the rural district after graduation, authority be vested in the University of Virginia and the Medical College of Virginia to collect by law such amount as the student has received from the scholarship.

Each bill appropriates \$5,000 for each of the years ending February 28, 1923, and 1924, to carry out the provisions in each measure.

Federal Aid For Maternity.

Twenty-two states have to this time accepted the federal aid for maternity care authorized in the maternity act. Five of these, Delaware,

Minnesota, New Hampshire, New Mexico and Oregon, have accepted by action of their legislatures, while seventeen have done so through their governors, under the provision of the bill permitting such acceptance within a period of six months after the next legislative session following its enactment.

The states accepting receive, under the bill, \$10,000 for the fiscal year ending next June 30, and \$5,000 in succeeding years, with an additional \$5,000 and a proportional share of \$710,000 based on population of the state, if these amounts are matched by state appropriations. The aid is conditioned on approval of plans for its use by the federal board.

Dr. S. W. Maphis

Has returned to his home in Warrenton, Va., after a visit to New York city.

Time For Income Tax Again.

There have been some changes in income tax laws since last year. Those now required to make a return are "single persons who had a net income of \$1,000 or more, or gross income of \$5,000 or more. Married couples who had net income of \$2,000 or more, or gross income of \$5,000 or more."

March 15, 1922, is the final date for filing returns and making the first payments. These shall be made to the collector of internal revenue for the district in which the person lives, or has his principal share of business. Full directions may be had from Form 1040A and Form 1040, to be obtained at above named source.

Exemptions provided by revenue act of 1921 are \$1,000 for single persons, and \$2,500 for married persons whose net income was \$5,000 or less, and \$2,000 for married persons whose net income was \$5,000 or more. Under the revenue act of 1918, the personal exemption allowed a married person was \$2,000, regardless of the amount of net income. The personal exemption allowed a married person applies also to the head of a family, man or woman, who supports in one household one or more relatives by blood, marriage or adoption. Exemption for all dependent children under 18 years of age is increased from \$200 to \$400.

The rate is 4% normal tax on taxable income up to \$4,000 in excess of exemption; 8% normal tax on balance of taxable income; surtax from 1% to 65% on net incomes over \$5,000 for the year 1921.

Dr. and Mrs. A. W. Rusmiselle

Have returned to their home at Waterford, Va., after a visit to Frederick, Md.

Dr. G. G. Painter,

Pulaski, Va., has been elected one of the directors of the People's National Bank of that place.

Bank Directors.

Drs. J. H. Smoot and W. C. Ford, of Woodstock, Va., have been elected members of the board of directors of the Shenandoah National Bank in Woodstock.

Lincoln Hospital Destroyed by Fire.

Thirty patients were removed to safety, when Lincoln Hospital for colored people, Durham, N. C., was destroyed by fire on January 26. The loss was estimated at between \$10,000 and \$15,000. It is understood that the hospital will be rebuilt at a cost of \$100,000, funds for new buildings having been raised sometime ago.

Dr. George P. Hamner,

Lynchburg, Va., has been elected president of the Piedmont Field and Stream Club for the year 1922.

Dr. Frank S. Johns

Has been elected president of the Richmond alumni of the Kappa Alpha Fraternity.

Dr. J. W. Holmes

Pulaski, Va., has been elected chaplain of the Pulaski County Camp of Confederate Veterans, for the ensuing year.

Dr. W. Brownley Foster,

Roanoke, Va., was a recent visitor to this city.

Richmonders Live Longer Than Formerly.

Figures given by the Bureau of Health of Richmond show that the average years of life in this city have increased from 24 in 1872 to 40 in 1921. Reduction in number of deaths from communicable diseases is one of the factors which has helped in this extension of life. The Bureau states that the age limit is yet too low and it will endeavor to raise this age to 50 within the next decade.

The National Health Council

Held its annual meeting in Washington, D. C., January 5, at which time Dr. Livingston Farrand, president of Cornell University, was elected chairman for the year 1922.

Use of Alcohol in Practice of Medicine.

To get the opinion of physicians as to the use of alcoholic beverages in the practice of medicine, the American Medical Association recently sent questionnaires to 53,900 physicians. Fifty-eight per cent. of these were returned. From the the returns, the Association tabulated results which show that 51% regarded whiskey as a necessary therapeutic agent in the practice of medicine, while only 26% regarded beer and 32% wine as necessary therapeutic agents in their work.

Dr. and Mrs. James B. Abbitt,

Norfolk, Va., recently visited their former home, Appomattox, Va.

Dr. and Mrs. Mark W. Peyser,

Of this city, celebrated the twenty-fifth anniversary of their wedding on the 27th of January.

Dr. Bernard H. Kyle

Has returned to his home in Lynchburg, Va., after doing special work in orthopedic surgery in Boston. His offices are in Wall Building.

Dr. H. S. Belt,

South Boston, Va., is out again, after an illness of several months. He is leaving shortly for a visit to friends in Florida.

Dr. and Mrs. William R. Aylett,

Newport News, Va., have been recent visitors in this city.

Johnston Willis Sanatorium to Commence on New Building Soon.

The Johnston-Willis Sanatorium property, at the corner of Franklin and Sixth Streets, this city, has been sold to the Foreign Missions Board of the Southern Baptist Convention for \$100,000, but possession will not be given for two years. By that time, Dr. Murat Willis and the physicians associated with him will have erected a more modern and fireproof hospital at Kensington Avenue and the Boulevard, facing the Confederate Battle Abbey. The site was acquired several years ago but the building has been held up owing to the high cost of building materials.

Dr. F. Musgrave Howell,

Recently located at Big Island, Va., has now moved to Lynchburg, R. F. D. No. 4, Va.

A. M. A. Committee on Gorgas Memorial.

In accordance with a request received from the Gorgas Memorial Institute of Tropical and Preventive Medicine of Panama, Dr. Hubert Work, president of the American Medical Association, has appointed a committee composed of Drs. George E. de Schweinitz, of Philadelphia, Charles W. Richardson, of Washington, and Fred B. Lund, of Boston, to co-operate with the officers of the organization.

This memorial to General Gorgas is to be established in the city of Panama for research and the extension of means of prevention of tropical diseases. Credit for the conception of this memorial belongs to Dr. Belisario Porras, president of the Republic of Panama, who, in the name of the government, has tendered the site, a building and all required equipment, valued at approximately \$500,000.

Deaths of Physicians in 1922.

According to reports already compiled, the *Journal of the A. M. A.* estimates that there were slightly over 2,300 deaths among the 160,000 physicians of the United States and Canada, during 1921, or a rate of 14.65 per 1,000. The ten year period in which occurred the largest number of deaths was 61 to 70, and the largest number of deaths for a given age was 66, there being 71 deaths noted at this age. Figures would seem to indicate that doctors are a long lived profession. There were 571 deaths between 61 and 70; 393 between 71 and 80; 240 between 81 and 90; 17 between 91 and 100, and 1 at the age of 101. The largest number of deaths was from diseases of the heart and circulatory system.

The Congress on Medical Education, Licensure, Public Health and Hospitals

Will hold its annual conference in Chicago, with headquarters at Congress Hotel, March 6 to 10, inclusive. Dr. Theodore Hough, of the University of Virginia, is president of the Association of American Medical Colleges and will deliver his address on Tuesday, the 7th.

The Standardization of Biological Stains.

The need of standardizing stains for biological uses has become increasingly evident during the last four or five years. During this period German stains have been either difficult to obtain or entirely unavailable; and the American products, although often excellent, have varied so much one from another as to

give uncertain results. The manufacturers have been willing to meet the demand of biologists, but the latter have generally been uncertain just what they wanted. Recently other societies have offered to assist in the work, many of the men concerned expressing a wish not to try to duplicate the Grubler stains, but to secure domestic stains better than their foreign predecessors.

The interest thus awakened led to a conference under the auspices of the National Research Council, on November 5, 1921, at the Chemists Club, New York City, to discuss the standardization of biological stains and the steps to be taken to develop a reliable American supply of these.

Dr. James Morrison

Has been elected president of the Lynchburg, Va., chapter of the University of Virginia Alumni for the year 1922.

Dr. McGuire Awarded Service Medal.

Dr. Stuart McGuire, of this city, has been awarded the distinguished war service medal by the U. S. Government for meritorious services as commanding officer of Base Hospital No. 45. The presentation was made at Fortress Monroe with full military ceremonies. War department records showed that his was the most efficient unit in France, though manned almost entirely by former civilians.

Dr. J. M. Burke Honored.

Dr. Joseph M. Burke, Petersburg, Va., chief surgeon for the Seaboard Air Line Railway, was recently tendered the position of professor of materia medica in a southern medical college but declined for personal reasons.

Dr. and Mrs. John W. Carroll

And daughter, of Lynchburg, Va., returned home early in January from a trip to Indianapolis.

Dr. and Mrs. Junius F. Lynch,

Norfolk, Va., were visitors in this city the middle of January.

Married.

Dr. Edgar A. Pole, Hot Springs, Va., and Mrs. Alice Clarke, of Charlottesville, Va., early in January.

Hilltop Sanatorium to Open Shortly.

The Danville Masonic lodges will fully equip one of the rooms at Hilltop Sanatorium, the

new tuberculosis sanatorium to be opened shortly in Danville, Va. Some other local societies are planning to equip other rooms.

The Red Cross Courier

Made its initial appearance in January as the official journal of the American Red Cross. It is published in Washington, weekly, and takes the place of all bulletins previously published by national and divisional headquarters.

Dr. J. Ross Hunter,

An alumnus of the Medical College of Virginia, who has been specializing in surgery in Huntington, W. Va., has been appointed surgeon in charge of Sheltering Arms Hospital, at Hansford, W. Va.

Dr. R. E. Mitchell,

Of this city, is taking a post-graduate course in eye, ear, nose and throat work at the Brooklyn, N. Y., Eye and Ear Hospital.

The Richmond Tuberculosis Association

Held its annual meeting on February 2, at which time a good report was made of work during the past year. Dr. Garnett Nelson was re-elected president and the following doctors, in addition to Dr. Nelson, were made directors: Drs. P. D. Lipscomb, N. T. Ennett, C. C. Hudson and E. C. L. Miller.

Doctors Officers in Lions Club.

Dr. J. McCow Tompkins was elected a member of the board of directors and Dr. Dorsey G. Tyler lion tamer of the Lions Club recently organized in Richmond. Mr. G. H. Winfrey, secretary of the Medical Society of Virginia, was elected secretary of this new organization.

Dr. H. Taylor Hawkins,

Clover, Va., has been made commander of Clover Post No. 110, American Legion.

Dr. L. H. Apperson,

Recently of Victoria, Va., is now located at Old Church, Va.

Dr. B. F. Butler

Has moved from Newport News, Va., to Cooper, N. C.

Infant Mortality Rates Lowered in 1921.

Reports received through the Bureau of Census to this time indicate record low rates for infant mortality throughout the country last year. No city shows a higher rate for

1921 than for 1920, though two have the same rate. The lowest infant mortality rate was 47 per 1,000 births, the highest 111 per 1,000. The only Virginia cities listed in this report were Norfolk and Richmond, with rates of 82 and 101 per 1,000, respectively.

Location With Small Acreage For Doctor or Any One Wanting Farm With Small Acreage.

This property is in the western part of the State in a village of about 150 to 200 inhabitants, and on a railroad. The practice is practically unopposed. The property consists of an 8-room house in good condition, well under shelter; an office, barn for six horses, garage, corn crib, and other out-buildings on 30-acre tract with about 70 fruit trees beginning to bear. It is within half a mile of two churches, store block, smith shop, Masonic hall, school (2 rooms) in front of house, and garage across the road. Can be bought for \$5,500 on the right kind of terms. Write "T. A. G.", care this journal. (Adv.)

For Sale.

Office equipment of the late Dr. D. A. Kuyk, who specialized in diseases of the eye, ear, nose and throat. For detailed information, communicate with Dr. M. P. Kuyk, Bellevue Park, Richmond, Va. (Adv.)

Wanted.

Non-assembled examinations will be held to establish lists of persons eligible for appointment to vacancies in the following classes of positions in the service of the State of Maryland. Application blanks and full information as to the requirements, duties, etc., may be secured from the State Employment Commission, 22 Light Street, Baltimore, Md. Assistant Physician (Mental Diseases), \$1,500 to \$1,800 and maintenance; Assistant Physician (Tuberculosis), \$1,140 to \$1,500 and maintenance; Deputy State Health Officer, \$3,000. (Adv.)

Obituary

Dr. George L. Clark,

Of Clarkton, N. C., died January 24, after a short illness with pneumonia. Dr. Clark retired from practice about two years ago after being in active work for forty-two years. He graduated in medicine from the University of New York in 1876. He is survived by his

wife and several children, two of whom are Drs. Eugene S. and DeWitt D. Clark, both alumni of the Medical College of Virginia.

Dr. James Shelbourne Ewing,

Of Jonesville, Va., died January 6, at the age of 46. He was graduated from the Louisville, Ky., Medical College in 1903 and was at one time a member of the Medical Society of Virginia.

Dr. Fletcher Drummond,

One of the oldest and most prominent physicians of Accomac County, Va., died about the middle of January, at his home at Parkside, after a brief illness. He was 74 years of age and a graduate of Jefferson Medical College, Philadelphia, in 1869. He was engaged in active practice over a period of fifty-five years, and until within a few weeks of his last illness. He was a member of the Medical Society of Virginia.

Dr. Floyd J. Gregory,

Of Keysville, Va., died from pneumonia, at Victoria, Va., January 20, at the age of 46. He was a well known physician of the Southside, but had not been in active practice recently, owing to bad health. He graduated from the Medical Department of Vanderbilt University, at Nashville, Tenn., in 1901, and was a member of the Medical Society of Virginia. Several sisters and brothers survive him. The interment was made at Keysville.

Dr. William Phillips Carr,

Formerly of Washington, D. C., died from heart disease December 27, at his home at Summit Point, W. Va. He was 63 years of age and graduated from George Washington University Medical School, Washington, in 1888. He had been professor of clinical surgery in this school since 1906. Dr. Carr was well known in this State and was for a number of years a member of the Medical Society of Virginia.

Dr. Joseph MacDonald, Jr.,

Founder and managing editor of the American Journal of Surgery, died suddenly from cerebral hemorrhage, on January 7, at his home in East Orange, N. J. He was 51 years of age and a graduate in medicine from the University School of Medicine, Baltimore, in 1904. He was identified with a number of medical associations, among them the American Medical Editors' Association, of which he was an ex-president and for many years secretary.

Fifty-third Annual Session, Norfolk, Va., October, 1922

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Original Communications

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS.*

By F. D. WILSON, M. D., Norfolk, Va.

DEFINITION: A congenital hyperplasia or hypertrophy of the muscular coat of the pylorus, involving chiefly the circular fibers and resulting in a partial or complete stenosis of the pyloric orifice of the stomach.

Much controversy has centered around the question of the congenital or prenatal origin of the subject of this paper. The sometimes late onset of symptoms would seem to indicate that the condition is acquired after birth. The hyperplasia or hypertrophy of the tissues, as disclosed at operation or at autopsy in cases terminating fatally within a few days or a few weeks after onset of symptoms, certainly strongly suggests a congenital origin. A thickened pylorus has been demonstrated in the fetus, and one writer, in a series of six cases, tries to prove that hypertrophy of the pylorus at birth is a normal condition.

HISTORY: In 1787, Dr. Hezekiah Beardsley, a New England physician, described "A Case of Scirrhus in the Pylorus of an Infant." In 1903, Dr. Wm. Osler identified this as congenital hypertrophic pyloric stenosis. In 1777, Dr. George Armstrong, an Englishman, designated "Spasm of the Pylorus," a condition he had treated for "Watery Gripes." His patient died. In the century following Beardsley's paper, only two cases are found in the literature. Pearce, in reviewing the literature in 1919, says that nearly all we now know concerning the malady, has been contributed since 1897. Up to 1904, only 123 cases had been reported; in 1914, more than 1000. Since the latter date, numerous cases have been reported, probably because of greater familiarity with the symptoms and physical signs.

The condition very often occurs in the first born and is more common in male children—

the proportion being almost four males to one female. Holt says it occurs nearly always in the breast-fed (which is easy to understand if it is of congenital origin). No studies as to race or other influence have come to my attention. The onset of symptoms occurs from the first to the fourth day after birth in 25 per cent. of cases, fourth to the fourteenth day in 25 per cent., fourteenth to the twenty-first day in 25 per cent., and from the third to the sixth week in 25 per cent. (Reuben). Elsner says symptoms never occur after the ninth week and that most children die before the end of the third or fourth week.

ETIOLOGY: The cause of congenital hypertrophic pyloric stenosis is almost if not quite as obscure as it was when Dr. Beardsley published his monograph. Downes believes an edema resulting from circulatory disturbances caused by the increased effort to force food through a partly occluded pyloric orifice responsible for the symptoms. An undue irritability of the vegetative nervous system is advanced as a cause; I have been unable to locate reports on the contraction time of the voluntary muscles in the disorder. Many cases are associated with a spasm of the pylorus, an evidence of hyperexcitability of the nervous system. Recalling the familial aspect of spasmophilia, it is easy to believe that an underlying hyperexcitability of the nervous system may contribute largely to the symptoms. This, of course, is merely speculative.

SYMPTOMS: *Vomiting.*—An infant, a few days or a few weeks old, previously well, usually a male and breast-fed, suddenly begins to vomit during or shortly after nursing. The vomiting may be explosive or projectile from the first, or may be only a regurgitation, such as that seen in most infants who have been overfed. If not projectile from the first, it soon assumes this characteristic. At times the vomitus, which consists only of food previously taken and showing little or no evidence of digestion, may be expelled to a distance of several feet from the patient. As the disorder

*Read by title at fifty-second annual meeting of Medical Society of Virginia in Lynchburg, October 18-21, 1921

progresses, the patient may retain one or more feedings, only to lose later all or nearly all of the food taken, the amount lost depending, of course, on the extent of the pyloric stenosis, the degree of gastric dilatation, the quantity of food ingested, and the severity of the associated spasm. During the first few days following the onset of symptoms the patient is nearly always hungry after a vomiting spell and is generally ready for more food.

Constipation.—Too much emphasis cannot be placed on this symptom. In extremes of stenosis, the stools contain little or no food residue but consist only of intestinal secretions colored with bile. There may be several stools daily, the napkins each time being barely stained with fecal matter. In incomplete stenosis, the stools show all variations between the above description and the normal.

Emaciation.—This is rapid and extreme in the well defined cases. After a few days the little patient is hardly more than a shadow of his former self. Prostration and death ensue in from a few days to three or four weeks.

Oliguria.—Because of the constant loss of food by vomiting, micturition rapidly becomes less frequent and finally stops altogether. The urine becomes highly colored and may contain acetone bodies, a severe acidosis ensuing.

On physical examination in the early stages, the patient may present nothing on which to base a diagnosis. However, in the majority of cases, there is presented a picture which can hardly be mistaken for any other condition with the single exception of pylorospasm. A careful study of the individual case will clear up any doubt one may entertain as to the identity of the disorder. Seen early, the patient is usually well nourished; later, varying degrees of emaciation are presented. Occasionally, a striking objective sign is a fullness of the upper half of the abdomen and a corresponding flatness of the lower half; especially is this true if food has just been given. Characteristic left to right peristaltic waves of gastric origin, beginning in the left hypochondrium and disappearing at or just to the right of the median line a little above the umbilicus, slowly follow each other across the abdomen. The waves are about the size of a hen's egg with a projection of about one-eighth to nearly only-half inch above the surrounding abdominal level; often two or three waves are seen at the same time. The waves are best elicited

by giving one to one and one-half ounces of breast milk or water; if more is given, distention occurs and the picture is obscured. Rarely, cases have been met with in which no gastric peristalsis could be seen.

Tumor.—Most writers agree that in the majority of cases an olive-shaped tumor, varying in size from the terminal phalanx of the little finger to that of the thumb, can be palpated at or near the median line of the abdomen between the umbilicus and the ensiform. It is usually found in the median line or just to the right of the median line; occasionally it is high under the liver margin. Ladd and others have called attention to the fact that, owing to the rather frequent location in the latter area, it is often impossible to determine its presence. The tumor is hard and is described as presenting a "cartilaginous feel." Examination for the tumor is best done immediately after an attack of vomiting, or when the stomach is empty. If the abdominal musculature does not relax sufficiently, ether may be employed as an anaesthetic; this is rarely necessary.

PATHOLOGY: At autopsy, hypertrophy or hyperplasia of the circular muscular fibers of the pylorus constitutes the principal lesion found. The longitudinal fibers are involved to a lesser extent. The thickening is at times so great as to completely occlude the lumen of the pylorus, and is more marked at the duodenal end than at the gastric portion. Moderate hypertrophy of the muscular coat of the pyloric end of the stomach is also observed. Secondary changes are seen in the stomach walls, and dilatation of the stomach is fairly constant. The intestines are usually collapsed.

DIAGNOSIS: In well defined cases this is usually not difficult. Early and persistent vomiting of the projectile type in an infant from a few days to three or four weeks of age should at once put the observer on guard. The hunger after vomiting, the constipation, oliguria and the rapid emaciation accentuate the picture. The left to right peristaltic waves and the presence of a small firm tumor deep in the midline of the abdomen or just to the right of it and between the umbilicus and the ensiform are almost pathognomonic. If the tumor relaxes and *entirely* disappears under the examining fingers, spasm of the pylorus must be regarded as the more probable condition.

The disorders from which pyloric stenosis must be differentiated are habitual vomiting, chronic indigestion, and pylorospasm. In habitual vomiting from over-feeding, the vomiting is not projectile, the stools are fecal in character, and normal in amount; there is no oliguria and the patient thrives. The gastric peristalsis is not perceptible and a tumor cannot be felt at the pylorus.

In chronic indigestion the vomiting is not projectile, the stools show evidences of indigestion, onset is usually much later and after weeks or months of artificial feeding. Gastric peristalsis is absent and a tumor is not felt.

Over the question of pylorospasm has the controversy waxed warmest, some writers contending that it does not constitute a clinical entity, the great majority admitting its frequent presence as a contributing factor in the production of symptoms in true stenosis. That spasm of the pylorus not infrequently occurs independently of muscular hypertrophy appears to have been definitely established. In milder degrees of pylorospasm the emaciation is less extreme, the stools contain a moderate amount of fecal matter, the oliguria is less marked, the vomiting is frequently attended by pain, onset of symptoms is usually later and the condition occurs more commonly in the artificially fed. In the more severe cases of pylorospasm, the persistent vomiting with definite gastric peristaltic waves and occasionally the presence of a pyloric tumor may tax the judgment of the most keen observer. However, the condition yields to medical and dietetic treatment and the passage of the duodenal catheter solves the problem in practically every instance. Fluoroscopic examination after the barium meal will also prove of service.

Alfred F. Hess, in a paper published in 1912, first called attention to the employment of the Nelaton catheter in determining the degree of patency of the pyloric orifice. He showed that the normal new-born infant's pylorus would admit a No. 14 French catheter and that at two or three months up to a No. 23 French could be introduced, but not a larger one. According to Howell, the following figures are approximately normal: Birth to two months, 13 or 14 French; two to six months, 15 or 16 French; six to twelve months, 17 or 18 French; one to two years, 18 or 22 French.

In studies on pyloric stenosis and pylorospasm, Hess showed that spasm with the class-

ical symptoms of stenosis could occur without the presence of the latter anomaly. He also demonstrated the ease with which infants could be given duodenal feedings through the Nelaton catheter. The technique of investigation of the size of the pylorus is as follows:

A not too soft No. 14 French rubber catheter is selected and markings made at 20, 25 and 30 cm. from the eyelet end. The patient is securely wrapped in a sheet and placed in the supine position on a table, an assistant steadying the head. The catheter, with water only as a lubricant, is introduced into the pharynx and gently passed through the cardia which is reached at about 20 cm. The tube, in its passage through the stomach, is deflected sharply to the left and along the greater curvature of the stomach, entering the pylorus at about 25 cm. The normal pharyngeal and cardiac (gastric) reflexes are readily recognized; a similar reflex, as evidenced by gagging, occurs as the tube passes the pylorus but persists only a few seconds. In pylorospasm the reflexes are increased, rarely to such an extent as to prevent access to the duodenum at the first attempt. By giving a small amount of water, the pylorus usually relaxes sufficiently to permit the tube to enter. Normally, before the pylorus has been entered, if the tube is not held in position, it will be seen to slowly emerge from the mouth. When the pylorus has been passed, it remains in situ, and gentle traction will show a positive resistance to its removal, indicating contraction of the pyloric sphincter over the tube. Duodenal contents may or may not be aspirated through a pipette inserted into the external end of the tube. The procedure is not difficult and one soon becomes proficient in introducing the tube. The findings of Hess were confirmed by the fluoroscope.

Fluoroscopic examination after bismuth or barium meals is enthusiastically advocated by many writers. Strauss says that the "peculiar characteristic snake-like contractions" seen in the pylorus after the bismuth meal, and which are independent of the rest of the stomach, "are absolutely pathognomonic." Babies who have been vomiting several days bear the bismuth meal poorly. By this procedure little information is gained which cannot be determined by the clinical course and physical findings, including, of course, the result of the employment of the duodenal catheter. It

would appear that in many instances the bismuth meal could be dispensed with to the great advantage of the baby, particularly if the little patient's vitality has been much lowered by prolonged vomiting.

SEQUELAE: Chronic gastro-intestinal disturbances often follow incomplete stenosis of the pylorus. Dilatation of the stomach is quite common. Hypertrophy of the pylorus may persist for many years without giving rise to symptoms.

TREATMENT: All cases of pyloric stenosis should be considered potentially surgical but no case should be treated surgically unless under medical treatment the patient is losing all his food or is shown to have lost 20 per cent. in weight and still losing. If 20 per cent., or in the opinion of some writers, 33 1-3 per cent., of the weight at onset has been lost, the Fredet-Rammstedt operation or some modification thereof should be done without delay. Strauss says that if 70 per cent. or more of the bismuth meal goes through in four hours medical treatment should be successful. If a 14 French or larger catheter can be passed through the pylorus, the condition can almost certainly be successfully treated without surgical intervention.

Two contributions to the non-surgical treatment of this disorder stand out above all others, viz; thick cereal feeding as employed by Sauer, as early as 1914, and the use of atropine as outlined by Haas in 1918. Sauer employs thick cereals as follows:—One part of cereal (usually farina) to seven of fluid (three of milk and four of water) are boiled in a covered double boiler for one hour. Sugar and salt are added in the desired amounts. The mixture is cooked until it adheres to an inverted spoon. Sauer emphasizes patience in feeding, at first an hour or more being required. He begins by giving thick cereals with each nursing. If this is not effective in lessening the vomiting, he alternates thick cereals with breast feedings. If both methods fail, thick cereals only are employed. The patient is placed on the right side after each feeding. Water is supplied by retention enemata, by the Murphy drop method, or by hypodermoclysis. There appears to be no good reason why the intra-peritoneal injection of 5 per cent. glucose in physiologic salt solution should not be done in emergencies. When thick cereal feedings have been persisted in for some time,

liquids also pass through the pylorus. About five to eight weeks of thick cereal feedings are required before an appreciable amount of liquid can be retained. Milk mixtures are then gradually substituted.

Haas gives a 1:1000 solution of atropine sulphate, beginning with one drop at each feeding and cautiously increasing the dose until a maximum of 1/24 gr. is given each twenty-four hours. The largest dose employed by him in twenty-four hours is 1/16 gr. He says that pallor rather than flushing of the skin is a danger signal. Children are peculiarly resistant to atropine poisoning, hence the large doses without untoward effects. The method is worthy of further investigation and gives promise of being of considerable value.

Gastric lavage and duodenal feedings have their place in individual cases. Short and long intervals of feeding have equally enthusiastic advocates. Because of the well known fact that fats prolong the emptying time of the stomach, the milk mixtures at first given should be relatively free from fats, hence whey mixtures have been widely employed.

MORTALITY: The reported death rate in medically treated cases ranges from none to 58 per cent.; that in the surgically treated from 2 per cent. to 50 per cent. The death rate is largely determined by the early or late recognition of the condition. In the past five or six years surgical interference has been attended by a much lower rate than in former years and should be considerably under 10 per cent. In medically treated cases the death rate is lower than formerly. Sudden death from associated thymus enlargement has been occasionally reported but not frequently enough to more than suggest thymus enlargement as a considerable factor in the death rate.

Almost all cases of congenital hypertrophic pyloric stenosis are first seen by the general practitioner or the obstetrician. The symptoms and the physical signs are nearly always reasonably easy of interpretation. The soft rubber catheter affords a ready means of clearing up the diagnosis. Let me urge that no case of persistent vomiting occurring in the early weeks of infancy be temporized with, if the loss of weight is constant, after four or five days of treatment, or if it reaches 20 per cent. of the weight at onset of symptoms.

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SURGICAL TREATMENT OF CONGENITAL HYPERTROPHIC PYLORIC STENOSIS.*

By STUART MCGUIRE, M. D., Richmond, Va.

During the last ten or twelve years I have operated on a progressively increasing number of babies with congenital hypertrophic pyloric stenosis. These cases have all been referred to me by two or three local pediatricists. In no case has a patient been brought to me by a general practitioner. This would seem to indicate that as a rule the family doctor is unable to diagnose the condition with sufficient certainty to be willing to rely on his own opinion. He either refers the case to a baby specialist or waits for it to get well or die under expectant treatment. No one appreciates the value of the various specialists in medicine more than I do. Almost daily I am indebted to one of them for advice that helps me out of a difficulty. But good baby specialists are rare and they are usually located in large cities, while babies are numerous and they are especially prevalent in country communities, hence the general practitioner should be able to make a diagnosis of congenital pyloric stenosis without aid and with a certainty and assurance that will lead to proper treatment.

The objects of Dr. Wilson and myself in preparing this joint paper are to stress the frequency and importance of the disease, to describe the symptoms upon which a diagnosis may be made, and to give the details of the medical and surgical treatment. My early cases of pyloric stenosis were subjected to a posterior gastro-enterostomy but, since the introduction of the Rammstedt operation, I have used it exclusively, as it is equally as effective and a much easier and safer procedure. The Rammstedt operation is familiar to all surgeons, but there are certain features of its technique which I have learned by observation or experience to which I wish to call attention. Singly, they may seem unimportant, but collectively, in my opinion, they will materially influence the mortality of the operation.

1. INSTRUMENTS. I believe it was Crile who said that in operating on a Lilliputian patient the surgeon should employ Lilliputian instruments. A watch cannot be adjusted with an ordinary screwdriver and a six or eight weeks old baby cannot be satisfactorily operated on with standard surgical instruments. Every surgeon who does much work on babies should have a special kit of tools for these cases, consisting of small scalpels, miniature retractors, mosquito artery forceps, delicate needles and needle holders, etc.

2. SPECIAL OPERATING TABLE. A small baby placed in the center of an ordinary surgical operating room table is a little bit of wiggling humanity who cannot be restrained by the usual straps or bandages, and who is so far from the edge and so low in the center that it is a back breaking ordeal to carry out the steps of a surgical operation. If the little patient is placed on a feather pillow in order to elevate him and protect him from the chill and hardness of the metal or glass top of the table, he soon sinks into a depression and little is gained.

Dr. W. L. Peple, of Richmond, who has had a large experience in abdominal work on infants, has devised a simple and cheap accessory, which can be placed on any ordinary table, that overcomes the aforementioned difficulties. It consists of a small wooden table about six inches in height, ten inches in width, and twenty-four inches in length, and has adjustable straps to confine the patient's arms and legs. By placing one or two bags filled with hot water beneath it and covering it with a small blanket, the baby can be kept warm

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without danger of receiving burns. If this accessory table is not at hand, a satisfactory substitute can be improvised by using a properly shaped operating room stool. No one, who has not tried it, can appreciate the added ease and comfort in operating on a baby elevated in the manner described.

3. **ANAESTHESIA.** As is usually the case when it comes to the subject of the anaesthetic, there is a controversy. I personally dislike to work with local anesthesia as it is time consuming and nerve racking, but after considerable experience with this special operation, I have come to the conclusion that it should always be done by anesthetizing the operative field with novocain and pacifying the patient by means of a sugar rag. The last is very important feature and by means of it I have often operated on a baby without a whimper or outcry during the ordeal. The idea was gained by witnessing a Jewish circumcision at which an assistant to the Rabbi held a cup of sweet wine which contained a number of boluses of sugar tied in linen or gauze. No local anesthetic was used but each time the baby opened its mouth to cry one of them was popped in and the result was as effective as it was ludicrous.

4. **INCISION.** The abdominal incision should be made through the upper right rectus, over the region of the hard movable tumor if it can be palpated. This incision should not be over an inch and a half in length, as this is long enough to permit the delivery of the pyloric end of the stomach and is short enough to prevent the undesired protrusion of other viscera. If there is any difficulty in bringing up the thickened pylorus with the finger, it may be delivered with a blunt hook.

The obstruction to the pyloric opening of the stomach should then be relieved by dividing the hypertrophied tissue. The hard globular mass is held between the thumb and finger of the left hand and a longitudinal incision is made through its least vascular part, beginning on the stomach side and cautiously ending over the duodenum. At one time surgeons were advised to use a very sharp knife and to dissect down accurately to the mucous lining. By following this practice I twice accidentally opened the lumen of the duodenum. I have found that the easiest and safest way is to make an incision only partly through the cartilaginous tissue and then take the handle of the knife and make pressure in the

line of the cut. The structure will break like the rind of a melon and the cleavage between it and the underlying mucous membrane will at once be apparent. The cut edges of the incision are then spread out with forceps until the constricted mucous lining unfolds and the obstruction to the pylorus is relieved. I have never attempted to cover the raw surface of the wound thus produced in the pylorus with a piece of omentum, or with a plastic flap cut from adjacent tissues as suggested by Strauss and I have had no symptoms to develop which made me regret not doing so.

5. **SUTURE AND DRESSING OF ABDOMINAL WOUND.** It is not safe in closing the abdominal incision to trust to simple tier sutures with catgut. I know this to my sorrow. Patients with pyloric stenosis usually have impaired vitality and their tissues heal slowly. They are fretful, have frequent crying spells and are likely to be distended with gas. All these facts make the possibility of the incision opening up greater than is the case after other abdominal sections. Therefore, in closing the incision, two or three through-and-through silk worm gut sutures should be inserted, including skin, fascia, muscle and peritoneum. After these are in place, the various structures should be approximated with catgut and then the silk worm gut sutures tied. If adhesive straps are used to retain the abdominal dressings in place, be careful that they are not applied too tightly as otherwise trouble may result.

TREATMENT OF HEMORRHOIDS.*

By HARVEY B. STONE, M. D., Baltimore, Md.

A common question asked by physicians and medical students is "What is the treatment for hemorrhoids?" as though there were a single set method of universal applicability. The answer usually given to this question is "It depends on the kind of hemorrhoids." Therefore, the first step in determining treatment is a good examination. Let it be said here that a casual external inspection or even a digital examination does not constitute a good examination—much less is it excusable to accept the patient's statement that he has hemorrhoids. The writer has seen many cases of fissure-in-ano, polyp, rectal ulceration and carcinoma that were sent in with a primary

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label of hemorrhoids. A good examination requires a firm table, a good light, best the knee-chest position, and in most cases a proctoscope, plus a trained and experienced examiner.

Assuming that the examination reveals the presence of hemorrhoids, two principal groups may be recognized—those cases requiring operation for cure and those which may be handled by some non-surgical method. None but the enthusiastic operator will deny the existence of a very large number of cases in which palliative measures are quite sufficient. These measures consist in securing regular, soft bowel movements, avoidance of straining, and the local use of ointments or suppositories containing mild stringents and sedatives. What then are the indications for operation? First, hemorrhage. Rare and slight bleeding may be no reason in itself for operation, but persistent slight bleeding, or occasional free bleeding, or regularly recurrent moderate bleeding are all sufficient cause for operation. Second, protrusion. The constant eversion of redundant tissue, causing interference with cleanliness, tendency to thrombosis and ulceration, and general discomfort is a reason for surgical removal. Third, pain. Hemorrhoids when uncomplicated, are not painful. Pain means the onset of thrombosis, ulceration, abscess or other complication that in itself needs surgical treatment.

Now to consider surgical methods. Most of those who ask "What is the treatment of hemorrhoids?" explain their real meaning by a second question "What operation do you do for hemorrhoids?" To this again the answer is: "It depends on the case." The writer has departed from the custom in which he was trained, of nearly always doing the Whitehead operation, and has adopted a fairly wide eclecticism. In a few cases, where only one or two hemorrhoidal masses are present, and some other condition makes extreme simplicity desirable, a method is employed which is perhaps scarcely surgical, and which charlatans have misused and brought into disrepute. This consists in injecting the mass with some substance such as alcohol, solutions of quinine and urea hydrochloride, or carbolic acid, which causes tissue necrosis and sloughing of the hemorrhoids. There may be theoretical and some real objections to this method, but when carefully performed in properly selected cases it has a minor place in the treatment of hemor-

rhoids. Excluding this minor group, the cases that require surgical removal may be divided into those which present more or less discrete hemorrhoidal masses, and those in which the whole anal circumference is involved, or, as it is often termed, those having a complete rosette. For the first of these classes, the Allingham, the Pennington, the clamp and cautery, and innumerable other sub-varieties of operations have been published and used. The essential principle of all consists in the removal of the hemorrhoids by incisions in the long axis of the anal canal, so that the wounds left are straight and run up into the anal canal, instead of being circular as in the Whitehead. The writer uses generally the following method: The hemorrhoidal mass is clamped and pulled down and its upper pole ligated by one end of a continuous fine catgut suture. The hemorrhoid is then excised, care being taken to remove all blood-vessels, and the suture used to close the oval defect by passing it from side to side in a continuous lock-stitch.

When there is a complete rosette of hemorrhoids, especially, as is usual, with some prolapsus of mucosa, no other method meets the indications as does the Whitehead operation. It is to be remembered that the Whitehead operation is more difficult to perform correctly than the ordinary hernia, appendectomy, or gastro-enterostomy; that it requires most careful and accurate dissection and suture, and that it entails possibilities of damage to sphincter control, of stricture, and of sensory disturbance. But, with all these qualifications, it still remains, in properly trained hands, the one operation for a most important group of cases. The qualifications mentioned, however, should restrict its use to those cases only in which it is really indicated.

In certain cases where one-half of the anal circumference is generally involved in varicosities, the writer has done a half-Whitehead with very satisfactory results.

The question of anesthesia is often raised, and will be mentioned here only to say that local anesthesia has a very wide field of usefulness in rectal surgery generally. Its use has rarely been attempted by the writer for a complete Whitehead, but for all the other types of hemorrhoid operation it is immensely satisfactory in properly selected cases. Its in-

dications and contra-indications are much the same as for local anesthesia in other fields.

In conclusion, a word about post-operative pain. The convalescence from hemorrhoidectomy used to be one of the most painful in the whole surgical range. Persistent efforts have changed this condition so that now it is very frequently the case that no pain at all, or very little, is experienced after operation. Various factors have contributed to this result. The rectal plug has been abandoned. Wound edges are handled with care to avoid tags. Sutures are not drawn too tight. Skin is wounded as little as possible and, when it is necessary to incise skin, the creation of pockets and dog-ears is avoided. Lastly, after operation a small amount of 95 per cent. alcohol in numerous very small quantities, two to three drops, is injected with a fine hypodermic needle just under the skin in multiple puncture wounds about the whole anal margin, about one c. m. outside the anal margin. This produces a local anesthesia lasting several days which helps greatly in abolishing post-operative pain.

18 West Franklin Street.

DISCUSSION.

Dr. Stanley H. Graves, Norfolk:—I have enjoyed Dr. Stone's paper very much. The subject of hemorrhoids is a very interesting one.

No one knows just how much these patients suffer, and never mention their discomfort. I have a patient whom I operated on the day before I left for this meeting, who has suffered from bleeding hemorrhoids for six years, and was so exhausted she had to abandon her business, yet she had never sought treatment. I operated on her very successfully, and am sure she will be entirely relieved in time.

As to examining these patients, a proctoscopy in the hands of the general practitioner is rather difficult but, when the patient calls on the specialist, a diagnosis is relatively easy. We are often surprised at the great number of findings which were thought to be hemorrhoids, but are not. A few days ago, a little seven year old boy was referred to me for supposed hemorrhoids, which proved to be a rectal polyp about $2\frac{1}{4}$ inches from outlet of bowel which was causing all his irritation and bleeding.

I use morphia with most of my cases, as there is usually considerable pain about two hours after operation; also exercise considerable care with first movement of bowel. Much discomfort can be prevented at this time by injecting about four ounces of sweet oil through tube, then a small S. S. enema. As soon as emptying of bowel is over, put them in tub of hot water (Sitz bath).

Most of my cases are done under local anesthesia.

As to the Whitehead operation, this is fine where

there is marked prolapse. I do not like the operation. It should not be attempted except by a very skilful surgeon, and then with great care, and good after-nursing and attention, if the best results are to be obtained.

FURTHER OBSERVATIONS UPON THE USE OF BAGS AND VERSION AT TERM.*

By M. PIERCE RUCKER, M. D., Richmond, Va

At our meeting last year in Petersburg, I reported fifty cases of the combined use of bags and version at term, with morphin and scopolamin in the first stage. These three obstetrical procedures have been tried separately for a number of years, but their combination is new, although each seems particularly adapted to the other. The morphin and scopolamin makes an excitable and anxious patient tolerate the bag and shortens the first stage, while familiarity with versions, as done by Potter, robs the bag of its inherent dangers of malposition and prolapse of the cord, and also practically eliminates the second stage of labor. The conclusions of last year as to the benefits to be gained by the method still hold good, but further experience has shown the desirability of certain minor changes in technique, especially as to the time of administration of the drugs, and the preparation of the patient.

Occasionally, when morphin and scopolamin are given before the bag is placed, the patient becomes unmanageable when the introduction of the bag is attempted. She can not be reasoned with, and strains and struggles so that a general anesthetic has to be given before you can even make a vaginal examination. This has happened to me three times. My practice now is to give only morphin before the bag is placed, and if the patient complains of my hurting her, to give her gas-oxygen when I introduce the bag. A few of my patients have had no preliminary dose of morphin, and have complained of no pain whatever. I am inclined to think that it is only when the patient is frightened by the preparations, that gas-oxygen is necessary. Scopolamin is begun as soon as the patient is put back to bed. A darkened room is of great help at this stage, but I no longer rely upon the memory test as a guide in the administration of the scopolamin. The first dose is

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one one-hundredth of a grain. After that one two-hundredth of a grain is given often enough to keep the patient drowsy between pains. The total amount of scopolamin per case averages a fiftieth of a grain.

PREPARATION OF THE PATIENT.

It was my custom, after the usual preparations, consisting of shaving, a soap and water scrub up, and rinsing with bichloride of mercury solution and sterile water, to introduce a large bivalve speculum, lubricated with the tincture of green soap, and swab the cervix and the vagina from above downward with equal parts of the tincture of iodine and alcohol. Although I have always been careful to prevent the iodine from running down upon the rectum, this procedure has caused some pain in most patients. Then too, it has caused a dryness and a certain amount of swelling of the vaginal mucosa, that has in a measure interfered with the easy introduction of a bag. This has been especially noticeable in primiparae. For this reason, I have endeavored to find a substitute for the iodine. Young, White, and Swartz, in their preliminary report¹, "A New Germicide for Use in the Genito-Urinary Tract: Mercurochrome-220", find that this new drug has the following qualities that make it valuable. It has great germicidal power, ready penetration of the tissues, ready solubility and stability of solution, and sufficiently low toxicity to avoid systemic effects from the small amounts of the drug that may be absorbed. In addition, it does not cause irritation, as is shown by its toleration by the bladder for several hours. Mercurochrome-220 then seems to be just the drug I have been looking for. It is a brilliant red and is of sufficient contrast to the pink of the vaginal mucosa, to make it apparent when any portion is overlooked. I have, therefore, recently been using a 1% solution of this dye in place of the iodine and have painted not only the cervix and vagina, but also the vulva and adjacent skin. So far, it has worked very well and has caused no irritation. The patient is shaved, scrubbed with tincture of green soap and sterile water, and then with bichloride as before, and rinsed with sterile water. The lower part of the abdomen, the inner aspect of the thighs, and the vulva are painted with the mercurochrome solution. If any folds between the labia are

overlooked, the unstained skin or mucous membrane calls attention to the omission at once. A bivalve speculum, lubricated with the tincture of green soap, is introduced and the cervix is exposed. It is treated with a large swab saturated with the solution. The speculum is withdrawn and then the swab, so as to wipe out the vagina from above downward. A Voorhees bag, rolled up tightly to form a cylinder, and held by a special clamp, is then placed within the cervix under the guidance of the finger. This can be done very readily as the cervix is usually partly dilated. Sometimes it is necessary to insinuate the finger into the cervical canal and draw it forward in order to get sufficient dilatation.

The No. 5 Voorhees bag has proven the best size for routine use, as it gives sufficient dilatation for version and starts up labor pains sooner than the larger size. In certain cases of funnel pelvis, when version is not desirable, a No. 2 bag is preferable as it is not so likely to displace the presenting head. The bag is weighted until the patient begins to have regular pains, and then the weight is removed. As soon as the bag is pushed through the cervix by the uterine contractions, preparations are made for delivery, except of course when the small No. 2 bag is used. The patient is anesthetized and the bag is withdrawn. The dilatation of the vagina is completed in the manner described by Potter, and a Potter version is done.

Very little, if any, damage is done to the birth canal. If there is any laceration of the vagina, it is repaired with catgut. All cases, whether torn or not, get a deep suture of silkworm gut. This is secured by a shot and cut close so that there are no sharp stiff ends to bother the patient and complicate the after-care. The sutures are placed immediately after the birth of the baby while the patient is still under the influence of the anesthetic. If there is no bleeding, the uterus is left absolutely alone until the placenta separates, and then the afterbirth is expressed in the usual way. The silkworm gut suture is then secured by the perforated shot. It is left until the patient comes to the office in the fourth or fifth week of the puerperium for her discharge examination. Its removal is easier at that time and, in the mean time, it has given the perineum a certain protection.

RESULTS.

My results in the past year have not differed materially from those I reported in Petersburg. The immediate results both as to the mother and the child, I gave in detail at that time². I thought that it might be interesting to report now the subsequent history of the children. Of the fifty cases, forty-nine babies were born alive. One was a still born macerated fetus. One baby died of an enlarged thymus on the first day. To the mothers of the remaining forty-eight a questionnaire was sent. Forty-six replies were obtained, although six of the illegitimate children could not be followed for an entire year; one was lost sight of after six weeks, one after two months, three after four months, and one after eight months. Forty babies were followed for a year or more. The six illegitimate babies were discharged in excellent condition and it is probable that they have continued in good health, as it is usual for them to be returned to the maternity home if anything is wrong with them in the first year. They are sent out with a guarantee, so to speak. Thirty-eight babies were reported to be in excellent health. One was under weight as the result of whooping cough of several months' duration, and one was evidently luetic. He had been delicate from birth and had the "snuffles" and an enlarged liver. At the present time he has the appearance of marasmus and his doctor has great difficulty in getting any food to agree with him. Although when a year old he weighed 25 lbs., his present weight, 2 months later, is only 16 pounds. The mother of this child had no prenatal care and I can not therefore report upon her Wassermann. She gave the history of a great many miscarriages.

Among the babies reported as being perfectly well, one gave the history of whooping cough, one of influenza, one of pneumonia, and two of bowel trouble. Thirty-three, or 82½ per cent. gave the history of never having been sick. One baby had a squint in one eye that had about disappeared at the time of the report, and another had weak eye muscles with frequent crossing of the eyes for several weeks. Other than these two there were no instances of nervous or muscular disturbance. Forty-five mothers described the shape of the head as "normal," "perfect" or "beautiful." One head was rather flat at the back. Forty babies are said to have slept well, one fairly well, one

well most of the time, two poorly, and two not stated. "Does the baby eat well?" is answered "yes" or "splendidly" 39 times, "just beginning" once, "no" thrice, and unanswered three times. Three babies began to say "mama" and "papa" at 5 months, two at 6 months, one at 7 months, six at 8 months, four at 9 months, six at 10 months, two at 11 months, six at 12 months, and three at 14 months. One child was not talking at 12 months, and in twelve instances this question was unanswered. It is interesting to note that the two most backward children physically began to talk early. The luetic one began at 5 months and the whooping cough one at six months. The age at which the babies took their first step varied from 7 to 17 months. One child, a bottle baby after three weeks, began to walk at 7 months, two at 8 months, four at 9 months, one at 10 months, four at 11 months, eight at 12 months, two at 13 months, two at 14 months, three at 15 months, one at 16 months, and one at 17 months. Cutting the first tooth is probably the most definite developmental sign and the one most generally noted by mothers. It was answered in 39 of my questionnaires. Two babies cut first tooth at 4 months, four at 5 months, six at 6 months, seven at 7 months, nine at 8 months, five at 9 months, four at 10 months, one at 13 months, and one at 20 months. The last one was breast fed for 1½ years. Twenty-five babies did not cry much in the first two months. Fifteen cried a great deal. Three babies cried for three weeks, but were good babies after the breast feeding was supplemented with other feeding. Two mothers did not answer this question. "Much colic?" was answered "yes" 12 times, "no" 31 times, and unanswered 3 times. "Loose bowels?" was answered "yes" 9 times, "slight" 2 times, "no" 30 times, and unanswered 5 times. The entire series of 46 babies were breast fed for 6.25 months, the extremes being zero (two cases) and 18 months. The average weight at three months (27 cases) was 11.5 pounds, the extremes being six and sixteen pounds. At six months the average weight (28 cases) was 15.7 pounds with 10½ and 21 as the extremes. At one year the average weight (29 cases) was 22 pounds the extremes being 18 and 30 pounds.

In conclusion, it should be noted that the circumstances under which these babies were raised varied from that of an institution for the care of unmarried girls (8 cases) to that of a wealthy home with a baby specialist in

regular attendance. The majority of them belonged in ordinary homes and received the ordinary home care. The climatic conditions varied from the mountains to tidewater, from Brookline, Mass., to subtropical Carolina. The kind of food varied considerably as can be seen from the following list; breast milk, cow's milk, cow's milk and barley water, condensed milk, dryco, cream of wheat with cow's milk, malted milk, Mellin's food, and dextri-maltose. All of the babies have gone through one summer and some have gone through their second summer. That there should have been so little gastro-intestinal disturbance is remarkable, and points to the importance of continuing the investigation over a large series of cases.

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ANTISEPSIS IN OBSTETRICS.*

By G. BENTLEY BYRD, M. D., Norfolk, Va.

For the past few years there has been a tendency to shift from antiseptics to asepsis. The question naturally arises are we progressing or are we retrogressing, in making the change. I strongly believe that the profession is placing too much confidence in asepsis, particularly in obstetrics. The field of obstetrical operation is a constant source of potential infection, the region about the vulva is teeming with micro-organisms, and this infected region has no distinct line of demarcation, but rather extends well up into the vagina.

It is true that in hospitals every safeguard is thrown about the obstetrical patient, in the way of sterile linen and supplies, a special department for delivery, and trained assistance is present and ready to aid in every way; but we must remember that at the present day, only a small percentage of the obstetrical cases are delivered in the hospital or even in well appointed homes. The vast majority of them are obliged to be confined, not where conditions are ideal, but in homes surrounded on all sides by infection. I feel that oftentimes we who practice obstetrics in a modern hospital where we have every facility

and help in abundance, little appreciate the difficulties under which most of our fellow-practitioners in the rural districts do their work. Few men in the country are in a position to have sterile supplies for their patients, but this does not mean they are unable to do safe obstetrics. They have their antiseptics and by using them along with a little "common sense" they will achieve the desired results, namely the delivery and after-care of their patients without infection.

Just here it might be well to consider some of the antiseptics in common use and their relative value in obstetrical work. Iodine probably is the best all around antiseptic, but its peculiarity of requiring a dry field to be effective renders it practically useless in so far as obstetrics is concerned. It is the practice with some men to paint the vulva and surrounding parts and wash it off immediately with alcohol, just before delivery, but when we consider the great amount of moisture present at this stage. I feel that we have accomplished little by applying it. The fact that anesthesia is practically necessary before its application is often a contra-indication in itself. Soap and water, bichloride of mercury, and carbolic each has a distinct field of usefulness, and with these we can do safe obstetrics from the standpoint of preventing infection.

Preliminary to the first examination the patient should be thoroughly scrubbed with soap and water, then bathed with warm water, and finally with bichloride solution. She should then be given an antiseptic douche, consisting of 2% carbolic and green soap. I am aware that the last procedure is condemned by a number of prominent obstetricians, but the records of our clinic and hospital, extending over fifteen years, lead us to believe it a safe procedure and to continue its use. To the present date there has never been a case of infection to develop in a patient that we have delivered nor have our post partum complications ever indicated that the vaginal douche was an unsurgical procedure. Theoretically, the vaginal secretions sterilize the birth canal during the latter weeks of pregnancy. This is not a fact, however. Kronig and Pankov have shown that streptococcus pyogenes exist in 75% of pregnant women, and in nearly all multipara. Walthard found pathogenic bacteria in 27% of the vaginae of all pregnant women and these bacteria could

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be made virulent by proper cultural methods. To satisfy ourselves on this point, we carried out the following experiments in a series of cases. Each patient on admission to the Obstetrical Department was scrubbed with soap and water and bathed with 1-3000 bichloride solution. A culture of the vagina and cervix was then taken and transferred to culture media. Following this, the patient was given a S. S. enema, the parts were again bathed, she was given a mild antiseptic douche consisting of 2% carbolic and green soap. After waiting for at least three hours, a second culture was taken. The findings were quite conclusive. In cultures No. 1, each case in the series showed three or more colonies of bacteria at the end of 24 hours incubation, while cultures No. 2 never revealed more than two colonies and many of them had no growth after 24 hours incubation. The prevailing organism in the series was staphylococcus aureus.

After securing a clean field for our obstetrical work, it is our duty to keep it so. In the hospital and in outside work where it is possible to make the necessary preparations, the gown, sheets and towels are, of course, sterile. In private homes where from the emergency or other causes such sterile supplies are not available, the parts can be completely surrounded by towels wet in warm bichloride solution and wrung out. In all cases the parts should be bathed off from time to time with an antiseptic solution and, for this, 2% carbolic and green soap is ideal, because you not only have the use of a germicide, but this particular solution acts as a lubricant as well. Unnecessary vaginal examinations should not be made, yet I feel that the substitution of the rectal examination as a routine measure would get us into more serious trouble than could possibly be the case in carefully made examinations by the vaginal route. It is an established fact that in gynecological diagnosis the rectal examination is never considered the one of choice, but is merely resorted to when we are unable to examine the patient vaginally. If this is a fact, how can the rectal examination be the one "par excellence" when it is a question of obstetrical diagnosis? The writer does not wish to leave the impression that he never makes a rectal examination in these cases, but to say that we cannot make a vaginal examination without infecting our patient is an admission that

either we do not know, or that we fail to carry out our principles of preventing infection. The fear of carrying infection into the vagina by a vaginal examination seems to us to be most unreasonable. It is an admission, either that the gloved hand is unsterile or that the thorough scrubbing with soap and water, bathing with a strong antiseptic solution and douching with another antiseptic solution of sufficient strength, are not dependable. This is not only contrary to all reason, but it is also contrary to the experience of reliable men, who for many years have been following such a method without the slightest sign of trouble which would make them feel it to be risky. We cannot understand how the advocates of the no-examination plan can feel satisfied about the progress of the case. While we oppose unnecessary vaginal examinations, yet we feel that these examinations should be made just as often as may be required to keep the obstetrician in touch with the case.

As to the question of shaving the parts, while theoretically this may be a perfect plan, practically it is not one to be followed. It is often wise to clip the hairs surrounding the vulva, but to put every patient through the disagreeable ordeal of shaving is most humiliating to say the least. If the obstetrician waits, as some do, until a late stage of labor before shaving or painting with iodine, the unexpected advance of the presenting part may frequently cause him to be so hurried as to carry out the preparation incompletely. The free and frequent use of an antiseptic solution, following the first scrubbing with soap and water, and continuing throughout the labor, will sufficiently sterilize the parts, regardless of the hairs.

Whenever it becomes necessary to carry on any manipulation in the uterine cavity, such as version, forceps, etc., it is our practice to give immediately afterwards an intra-uterine douche of 1-5000 bichloride solution at a temperature of 110 F.

The after care should be along the same lines that have been suggested for the delivery. Frequent bathing with bichloride, care not to contaminate the vulva with rectal excretions, and keeping the parts protected with pads, which should be sterile.

It is not the intention of this paper to belittle the use of the "aseptic" technique, but the writer does want to impress upon you the fact that chemical antiseptics still hold an

important place in safe obstetrics, and that it is his sincere belief that they should be made use of more freely than is the present day tendency. We must remember that when a woman in labor commits herself to our care, it is our duty that we get her surgically clean, and from that time forward keep her so, until her period of lying-in is passed. To arrive at this end, we must rely upon our antiseptics, which ones, is a matter for the physician to decide personally. In my opinion, none are more useful than soap and water, bichloride of mercury, and carbolic acid.

DISCUSSION.

Dr. Joseph Bear, Richmond:—Dr. Rucker is to be congratulated on his excellent paper, for it covers a great scientific field. On the actual version, I beg to differ with him. I do not think that the introduction of a bag with the performance of a version as a routine should be done for, to my mind, it is manipulative obstetrics. In certain selected cases, where there are positive indications, version is a safe procedure. I think the entire question of version so practiced in a routine manner is more or less of a fad and, personally, I shall not use it except in certain selected cases. In spite of the skill of the obstetrician, there is danger to both mother and fetus.

Dr. M. Pierce Rucker, Richmond:—In regard to Dr. Bear's question, the routine use of bags at term gets you away from the "stuck head." The stuck head is due to a disproportion between the head and the pelvis, whether the pelvis be too small or the head be too large. One of the commonest causes of this disproportion is the overdue baby.

One word about Dr. Byrd's excellent paper: We obstetricians have been so intent with our antiseptics and asepsis, in keeping germs out, that we have forgotten the patient. I do not wish to minimize the importance of antiseptics, but we should also endeavor to keep the mother in good physical condition—avoid long difficult labor and postpartum hemorrhage. A patient exhausted by long suffering or depleted by postpartum hemorrhage has no resistance to withstand the least break in technique.

I have not used an intrauterine douche for a number of years, but I have a vivid recollection of a case of bichloride poisoning caused by a 1-5,000 solution of bichloride of mercury. This patient had an incomplete abortion, and I curetted her, in her home. In about an hour she collapsed. I rushed her to the hospital with the diagnosis of ruptured uterus. An exploratory operation failed to reveal anything the matter in the abdomen and pelvis. Several days later the urine showed epithelial and granular casts.

In regard to the postpartum care I have been in the habit of putting the patient at once upon general diet. By doing so, the milk forms more slowly and you get rid of the painful engorgement of the breasts that used to be so common. I also let the patient sit up whenever she feels like it. She does better and there are fewer retroversions when they sit up early.

BORDER-LINE CASES OF CALCULUS DISEASE OF THE KIDNEY.*

By R. ARTHUR HOOE, M. D. Washington, D. C.

From a standpoint of prognosis as well as treatment, cases of calculus disease of the kidney would seem divisible clearly into three groups—operative, inoperable and border-line. The majority of cases fortunately fall well within the first group, in which a single calculus may be found in the pelvis, calyx, or imbedded in the cortex accompanied or unaccompanied by active infection. In such cases the indications for operation are outstanding, the operative risk at a minimum. In the second group, fortunately a smaller group, are found those cases in which large branched calculi are seen filling both renal pelvis, extending into the calices and invading the cortex with extensive destruction of the secreting structure. Here trauma incident to lithotomy would be such as to destroy the remaining functioning tissue, operation therefore being clearly contraindicated. In between these two groups we not infrequently encounter cases so nearly approaching the second group as to render operation, although justifiable, hazardous because of accompanying conditions or combinations of conditions; hence the term border-line. Conditions and combinations of conditions which may place some of our patients clearly within the so-called border-line group may be enumerated as follows: Lithiasis, unilateral or bilateral complicating advanced constitutional disease, lithiasis with secondary infection occurring in a fused or horseshoe or solitary kidney, lithiasis in one kidney, disease in the other, bilateral nephrolithiasis including stone in the ureter on either or on both sides.

Confronted by such conditions, obviously one must arrive at a decision to operate and what operative course to pursue as well, only after most painstaking investigation and careful consideration. In the presence of advanced constitutional disease such as pulmonary tuberculosis, diabetes or malignancy, operation would seem justifiable only as a heroic measure for the control of alarming hemorrhage, the alleviation of acute pain due to obstruction with renal retention, or for the purpose of drainage where there is infection with rapid systemic absorption.

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LITHIASIS WITH SECONDARY INFECTION OF A SINGLE KIDNEY.—While it may be true that a single kidney has in the presence of uncomplicated stone a peculiar tolerance for repeated operation, such is not the case when pyelo-nephritis or pyo-nephrosis presents as an accompaniment. Here the tendency may be rapidly downward; however, with any degree of renal function remaining, lithotomy with drainage if indicated, although heroic, would seem justifiable.

LITHIASIS ACCOMPANIED BY DISEASE IN THE OPPOSITE KIDNEY.—The most common forms of disease occurring in the opposite kidney are pyelo-nephritis, pyo-nephrosis and hydro-nephrosis, although Braasch reports a case of tumor involving the opposite kidney which proved to be sarcoma. Where there is stone present in one kidney giving rise to acute disturbance and accompanied by pyo-nephrosis with systemic absorption in its fellow, indications for operation may be most confusing, regarding the kidney first to be dealt with. Drainage first of the pus kidney, or nephrectomy, according to the extent of destruction and the condition of the patient, is the more conservative procedure—the one of choice.

When, however, there are acute symptoms requiring relief in the kidney containing calculus, nephrolithotomy with drainage, if necessary, is indicated, the pyo-nephrosis in the opposite kidney being left temporarily undisturbed.

BILATERAL NEPHROLITHIASIS WITH STONE IN ONE OR BOTH URETERS.—Such cases when border-line may so present both structurally and functionally as to be most confusing regarding operative procedure. As a rule, however, complications, acute pain, continuous hemorrhage or toxic absorption from advanced renal infection, will indicate the kidney first to be attacked. It is probably a truth that pain is the greatest of guides in kidney surgery.

When studying kidney function in the presence of grave renal lithiasis, it must be remembered that the findings may be very misleading. Irritation caused by a renal calculus or the mere placing of a ureter catheter for comparative study may reflexly so inhibit secretion as to render the phenolsulphonephthalein estimate valueless. The fact, therefore, must be borne in mind that a long delay in appearance of the dye or a low output is not

necessarily a contraindication to operation. Importance of the value of repeated tests of renal function may be emphasized in the following case in point:

Mrs. M. B., age 45, was seen at the Mary Washington Hospital, Fredericksburg, Va., in consultation with Doctors Pratt and Harrison, on September 9th, 1921.

On admission, her temperature was 102. pulse 90, respiration 18. The patient gave a history of repeated attacks of pain in the region of the right kidney, extending over a period of ten years. No history, however, of recent pain in this region. Upon admission to the hospital her pain was abdominal and referred to the left lumbar region.

When seen by us her temperature was 99, pulse 86, respiration 20. There was no abdominal pain and the tenderness over the kidney posteriorly while definite, was less marked, according to Dr. Pratt, than on the previous day. The leucocyte count on September 9th was 14,600 differential count, polys. 71 per cent, large lymphocytes 10 per cent, small lymphocytes 14 per cent. Roentgenograms made by Dr. Smith showed a large shadow in the right renal area filling the pelvis and extending into the calices. An irregular shadow was also noted in the lower portion of the left kidney, presumably in the lower calyx. The kidney itself being clearly outlined was seen to be enlarged, its lower pole extending to the lower border of the transverse process of the third lumbar vertebra. There was also to be seen a small shadow, apparently in the ureter and at a point opposite the articulation of the third and fourth lumbar vertebrae.

The catheterized bladder urine which was acid showed the presence of albumen and pus in considerable quantities. Cocci and bacilli T. B. negative.

Upon cystoscopic examination, the bladder was normal in appearance. Ureter catheters were passed 25 c.m. up on either side. Marked tendency to their expulsion was noted. Urine collected from the right kidney contained pus and organisms, urea 6/10 per cent. There was no secretion from the left kidney in an hour. Phenolsulphonephthalein intravenously appeared on the right side in 15 minutes. Amount collected for 15 minutes contained 10 per cent of the dye.

The patient was admitted to the Emergency

Hospital at Washington two days later. On the day after her admission, urinalysis was as follows:

Total quantity, 24 hours, 1550 c.c.

Color, dark amber.

Trans., cloudy.

Reaction, neutral.

S. G., 1009.

Albumen, heavy trace.

Sugar, negative.

Urea, 1-3/10 per cent. (20.15 g.m.s. in 24 hours.)

Microscopically: Many pus cells, epithelium, mucus and bacteria.

On September 12th indigo-carmin injected intravenously was collected through both ureter catheters in 15 minutes.

On September 13th, cystoscopic examination revealed the same bladder picture except that the left ureteral orifice was found to be everted, edematous and angry in appearance. An X-ray catheter introduced was arrested on the left side in the lower ureter. Roentgenograms were made by Dr. Groover, which verified the findings of Dr. Smith except that the shadow apparently in the ureter was seen opposite the transverse process of the fifth lumbar vertebra in relation with the tip of the arrested catheter.

On September 14th the left kidney was approached extra-peritoneally through an oblique incision. The kidney was found enlarged as outlined by the radiogram. The enlargement was such and the kidney so imbedded that complete delivery was not attempted. With the lower pole presenting and the calculi having been located with some difficulty by means of a long needle, nephrolithotomy was done through a small incision just posterior to the border of the lower pole; two small phosphatic calculi being removed from the lower calyx. The nephrotomy incision was closed by means of two mattress sutures—one close to the calyx, the other three-quarters of an inch external.

The report of the roentgenogram of the day previous not having been received a search for the calculus in the ureter was made but none found.

With a small cigarette drain the wound was closed, healing followed by first intention, recovery was uninterrupted except by attacks at intervals of definite pain along the course of the lower left ureter. The patient was able

to be out of bed in two weeks following this operation.

On September 30th she was again cystoscoped in an effort to establish the status of the ureter calculus with the result that the bladder picture was again normal. Upon expressing surprise in her presence at the normal appearance of the left ureteral orifice and the ease with which the catheter passed to the kidney, particularly in view of the fact that all voided urine had been carefully examined without recovery of the calculus, she volunteered the statement that immediately before going to the cystoscopy room she had voided in the sitting posture, using for the first time her bath. During the act, she stated, there was a sudden arrest followed by the expulsion, as she described it, of a bubble, when she heard a sound as of something solid dropping to the porcelain beneath.

On October 6th the right kidney was exposed alike retro-peritoneally. The kidney which was normal in size, but somewhat flabby, was delivered, tipped forward and pelvic-lithotomy performed. A large rounded calculus densely adherent to the posterior pelvic wall with three small branches extending towards the calices was removed, immediately followed by the release of a considerable admixture of pus and urine. The pelvis was closed and with a cigarette drain extending to the pelvis posteriorly the incision was closed. The drain was removed partially in 48 hours, completely in 72, and the incision, somewhat to our surprise, has closed by first intention. Convalescence has thus far been uninterrupted.

Medical Science Building.

VARIATION IN THE SUGAR CONTENT OF SPINAL FLUID.*

By WALTER B. MARTIN, M. D., Norfolk, Va.

Qualitative examination of spinal fluid for sugar has been a common procedure in the past and a decrease or absence of sugar has frequently been noted in the acute meningitides. Observations showing an increase of spinal fluid sugar have been much rarer. Mestrezat records high spinal fluid sugar in toxic pneumonia, typhoid fever and in hyperglycaemic conditions due to diabetes or other

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causes. In February, 1920, C. Dopter reported an almost constant increase in spinal fluid sugar in epidemic encephalitis and this was soon afterward confirmed by Netter. Foster reports a series of eleven cases of encephalitis with spinal fluid findings from Massachusetts General Hospital and reaches the same conclusion.

During the past winter I have had occasion to determine the sugar content in spinal fluid in a variety of different diseases: namely, epidemic encephalitis, cerebrospinal syphilis, general syphilis, tuberculous, meningitis, pneumococcic meningitis, streptococcic meningitis, brain tumor, anterior poliomyelitis, tetanus, hypertension, cerebral hemorrhage, typhoid fever, toxic pneumonia and hysteria, and in normal individuals. More than sixty-five quantitative determinations were made.

Table I. gives tabulation of the various conditions mentioned with the range in sugar findings and the average percentage for each group of cases. Of the five cases of encephalitis, all were above normal except one; the average of these cases is 31% above the average normal. A striking reduction is seen in tuberculous meningitis and in the acute meningitic conditions, in one case falling as low as 14 mg. per 100 c. c. of fluid. The one normal reading was obtained very early in a case of streptococcic meningitis and doubtless later readings would have shown a reduction. Syphilis without nervous involvement has remained within normal limits, while cerebrospinal syphilis has shown a tendency to be low. In other conditions, such as brain tumor, hypertension, cerebral hemorrhage, hysteria and typhoid fever, the percentage of sugar has been approximately normal. In the only case of polio seen a low reading of 36 mg. per 100 c. c. was obtained. This has an especial interest in connection with the differentiation of this condition from encephalitis.

TABLE I

	No. cases	High	Low	Aver.
Epidemic encephalitis	5	92.1	52.8	67.7
Normal	6	56.0	44.0	51.5
General syphilis	5	60.0	46.8	50.6
Cerebrospinal syphilis	9	56.0	28.0	40.5
Tuberculous meningitis	3	34.8	24.0	29.2
Acute meningitis	3	56.0	14.0	28.0
General conditions	7	62.4	46.0	53.7

TABLE II

	High	Low	Aver.
Mestrezat	58.0	48.0	53.4
Nawratzke			46.0
Foster	61.4	44.2	52.8
Our record	56.0	44.0	51.5

A brief comparison with figures from other sources may be of value. Table II shows a comparison as to normal averages.

Principal interest is attached to the possible value of this procedure in the differentiation of epidemic encephalitis from other central nervous conditions, especially from tuberculous meningitis and cerebrospinal syphilis. This distinction is often difficult to make either on the basis of clinical signs and symptoms or on other spinal fluid findings.

The method used in the quantitative determination of sugar in spinal fluid has been Epstein's modification of Benedict's method, using the micro-colorimeter of Kuttner-Leitz. The especial advantage of this particular method is that only a small amount of the fluid is required to make the determination and the results are essentially as accurate as those obtained with the usual type of colorimeter. Two-tenths to one cubic centimeter of the material to be analyzed is placed in a test-tube and the protein precipitated out with a measured quantity of picric acid. This is then centrifuged and a portion of the clear supernatant fluid is transferred to another test-tube and brought practically to dryness over a flame. A small amount of sodium bicarbonate solution is added and the material is again brought to dryness, taken up with a few drops of water and transferred to a calibrated tube for comparison with normal standards.

It may be of interest to point out that normal spinal fluid should give a reduction with Fehling's solution. Material containing as much as 30 mg. of sugar per 100 c. c. marks the lowest limit of Fehling's reaction, so that as a rule spinal fluid in the acute meningitic conditions will give a negative reaction with Fehling's due to the fact that the sugar in this condition is usually reduced below 30 mg. per 100 c. c.

SUMMARY

Figures have been given showing the sugar content in spinal fluid of normal individuals and in those having various central nervous involvements. It has been shown that in encephalitis there is a distinct tendency to an increase of the percentage of sugar as contrasted with a marked decrease in acute meningitic diseases. While the number of cases studied is small and no dogmatic conclusions can be drawn, it is suggested that this factor may be of distinct aid in the differential diag-

nosis of epidemic encephalitis from other diseases of the central nervous system.

Flatiron Building.

BAGS AND VERSION.

Indications and Contra-Indications.*

By ROBT. P. KELLY, M. D., Lynchburg, Va.

Well do I recall the time when the introduction of a bag into the cervix uteri seemed to me a most complicated affair, far beyond the ability of the ordinary accoucheur, and to be accomplished only by the most expert obstetrician. Version, also, was looked upon in much the same way, and the result for the baby was usually expected to be disastrous, while the cervix and the perineum often suffered severe laceration. Perhaps there are among us some who feel as I have felt in regard to these two very necessary and useful operations, and, if so, I hope to allay their fears and convince them that such impressions are false, and that they can do these two operations with a little instruction and care.

Many of the obstetricians of this country have written about bags and have described the technique of their use, but it has always struck me that exact details of the introduction of a bag were very poorly described in most text books. To some of the men here, it may seem superfluous to describe the technique of this operation, but I feel that it may be of value to others, and, therefore, I shall do so briefly.

Given a case with proper indications, it may be necessary first to give some form of anesthetic. Some cases need nothing, some may have a hypodermic of morphine and scopolamine, while some may require a general anesthetic, especially where the cervix must be dilated a little before the bag can be introduced. Having prepared the patient in the strictest aseptic manner, a speculum is introduced, if necessary, the cervix is caught, not with a vulsellum, but with a sponge forcep or two, and held by the operator and assistant. The bag is now rolled into as small a body as possible, and introduced with a dressing forcep, De Lee's being preferable. Much gentleness should be exercised in placing the bag to avoid injury to the cervix, rupture of the membranes, or injury to the child. Having placed the bag, we now take a large sy-

ringe, most any make, and gradually fill the bag, being sure that it does not slip out into the vagina during this step. An assistant holds the tube of the bag after each injection of water. The bag is full when no more water can be easily forced in. When filled, the tube of the bag is now folded once on itself and tied, leaving a loop at the distal end to which may be fastened a weight, if desired.

INDICATIONS FOR BAGS: Placenta previa may be mentioned as one of the chief indications, and I know of no better method of treating one of these cases than by the introduction of a bag. The hemorrhage is controlled as a rule, and, at the same time, dilatation is hastened. One should always be sure that the bag is placed on top of the placenta and not between it and the uterine wall, which could easily happen. I recently was able to safely transport a placenta previa case twenty miles to Lynchburg hospital for treatment, after the introduction of a bag to control the hemorrhage. She lost practically no blood after the bag was placed, and I feel that she owes her life to the Voorhees bag, intravenous saline and a blood transfusion.

Another indication for the bag is for the induction of labor, premature or at term. These indications are seen in the toxemias at practically any period of gestation. When there is serious involvement of the kidney and severe toxemia, threatening the life of the patient, I know of no better method of treatment than to introduce a bag and induce labor, no matter what the stage of pregnancy. I have attempted a few times to accomplish this by packing the cervix, or by the introduction of one or two bougies, but I am sure that the bag is, better and, perhaps, safer. Also, the bags can be had in sizes suitable for any stage. In certain cases of slightly contracted pelves, where we might reasonably expect a viable child prematurely delivered, which probably could not be delivered at term, or would have to be delivered by Caesarean section, a bag would be indicated. A fourth indication for a bag is in a posterior occiput with ruptured membranes and an undilated cervix. The bag is a wonderful aid in these cases, since it gives us much earlier dilatation and, thereby, reduces to a minimum the time the head is compressed and consequently tends to avoid cerebral hemorrhage frequently seen in these positions. Bags may also be used in

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cases of breech or podalic presentation, where the presenting part does not act as a good dilator, or in any presentation where the membranes have ruptured before complete dilatation has occurred. They may be used in some cases of prolapsed cord with incomplete dilatation, being careful to see that the cord is well out of the way of pressure from the bag if possible. It may occasionally suffice to use a bag in certain selected cases of eclampsia where extreme haste, with its probable damage, may be unnecessary. Bags may be used occasionally to replace a retroflexed uterus.

There are several makes of bags, but Voorhees' bags are my preference. They may be had in sizes from one to six. For most of this work four or five will be found most suitable. However, where the pregnancy is only a few months advanced, it may be necessary to use even a No. 1.

Another supposed indication for bags is what I beg leave to call a *pseudo-indication*: I refer to the routine induction of labor at, or about term, for the convenience of, first, the obstetrician and, second, the convenience of the patient. I have handled a number of cases by this method in order to try out the plan. I must say that the temptation to use it routinely is great, since all the deliveries can be done during the day, and at convenient hours to all parties, with no loss of sleep to the obstetrician, but I am not yet convinced, nor is it likely that I shall be, that this is as safe for mother or babe as "watchful expectancy." I do not feel that any one is justified in the routine use of bags for the induction of labor at or near term, the chief reason for this position being the increased mortality ensuing to both mother and infant. Reed, an expert, shows an infant mortality of 6 per cent. in 200 cases. No one can deny that our chances for infection are in proportion to the number of vaginal examinations, and other vaginal manipulations. When we put a bag in the uterus, we are sure to put infection, also, into the uterus, and, during the time the bag is in place, drainage from the uterus is blocked. Monash, Chicago Lying-In Hospital, has conclusively shown that maternal mortality and morbidity are markedly decreased by rectal examinations. In view of this fact and of the fact that infant mortality is increased by the use of bags, I can not see wherein we are warranted in the routine use of bags as a means of inducing labor in normal cases. Still an-

other argument against "appointing the day" for delivery is the fact that we can not accurately determine the beginning of pregnancy nor, likewise, the time, even by measurements, when it should end. Bags are obviously contra-indicated in cases of vaginal infections. In using bags we should bear in mind the possible rupture of the bag. If they are properly taken care of and dried after use, they may last one or two years.

Let us now consider version for a few moments. When we think of this operation now-a-days, we think of Potter. Men from practically every part of the United States have gone to Buffalo to witness the work of this man of "version fame." It was my pleasure to spend about a week with him the past summer. He is a wonderful versionist, an expert, and I feel that any one who witnesses his work will certainly be able to perform version better and more safely than he ever did before. To see him deliver a case by this method almost convinces one that all babies should be delivered by Potter's version. But for the fact that I saw him, whose skill in doing version is probably greater than any other living man, lose a baby, *I might* have been fully convinced that all babies should be delivered by version. The case in question was a para-one, 23 years of age; the head was on the perineum; membranes ruptured some time before. This case would undoubtedly have delivered normally, and could have been easily delivered by forceps at the time version was done.

It may be interesting to some of you to hear briefly what his method is. In the first place, he does not induce his labor by bags or otherwise, but allows them to go into labor normally. As soon as the cervix is completely dilated or dilatable, and, as a rule, before the membranes rupture, he does a version as follows: The patient having been prepared as for any surgical operation and catheterized, he first dilates and "irons out" the perineum, inserts left hand always, no matter what the position of the child, into the uterus, between the uterine wall and membranes, running his hand all around to separate the membranes from the wall, carefully avoiding placenta, and locates both feet, going through the membranes high up in order to retain the amniotic fluid, wrapping a towel about his arm to prevent the fluid from gushing out upon him, pulls down *both feet* (at the same time gently pushing the head out of the pelvis with his right hand), until

the knees are exposed, at which time the version is complete. At this point he rests a few moments. He then pulls gently on the anterior foot and lower leg, until the pelvis of the child comes into view, when it will be seen that the pelvis rotates in the opposite direction, and is eventually delivered in that direction. This rotation is brought about by the traction on the lower leg, and the baby comes into the world with its back transverse to the pelvic outlet. The scapulae are next delivered and must be thoroughly exposed before any attempt is made to deliver the shoulder. Then the fingers and hand of the operator are pushed well above the shoulder, between the lips of the vulva, and the anterior shoulder is delivered with the upper arm. The child is now grasped with the operator's hand over the exposed shoulder and chest, and the baby is rotated so that the posterior shoulder now becomes anterior and is delivered as such. Both shoulders being now delivered, the lower arms usually fall out themselves; if not, they can be gently lifted up across the chest of the child and be drawn away from the perineum under the pubic arch. In this rotation movement the baby is not twisted from the legs, as is usually done. The older method of version brought the arm down as a posterior arm across the distended perineum, which was often the cause of extensive tears. The operator now determines whether or not there is any loop of cord around the neck. If not, he proceeds with the delivery. If there is it must be relieved and, if this is impossible, it must be clamped and cut. The fingers of the left hand are now inserted into the baby's mouth, and with the right hand *gentle pressure* is made upon the occiput, above the pubes, to aid in the flexion of the baby's head and, also, to direct the passage through the pelvic canal. The jaw is not pulled upon as a fracture might result. Up to this point no pressure from the outside has been made in the delivery, because such pressure over the head, before delivery of the arms, has a tendency to push the head down, which allows the arms to go up and the chin to extend, complications at all times to be avoided. It is this pressure that makes other methods difficult and dangerous. By this time the baby's mouth is exposed and the mucous milked out of the throat by gently stripping the front of the neck, when the baby will begin to breathe and often cry aloud. The head can be left in this position long enough to thor-

oughly dilate the perineum and vaginal structures, as no haste is indicated, and finally, the nose is delivered followed by the brow, in an extremely flexed condition, which is further assisted by lifting the baby well forward and up from the perineum.

THE INDICATIONS FOR VERSION will be governed, generally speaking, by the skill of the operator and the method used. We are greatly indebted to Potter for his improvement of the technique of this operation, and I feel sure that the field for version, when Potter's method is used, has been extended somewhat.

Some of the principal indications for version will be mentioned, prominent among them being placenta previa. Podalic version following dilatation by the use of a bag, which also controls the bleeding, is probably the best way to treat this most dreaded complication.

In transverse and oblique presentations, where the head can not be made to engage, when the diagnosis is made during the last month of pregnancy, it would be well to induce labor by a bag and do a Potter's version, provided the pelvis was about normal.

In cases of moderately contracted pelvis, there seems to be a difference of opinion as to the advisability of this method of delivery, as is the opinion on the use of bags in these cases. It is too much to say that all such cases should be treated in this way, but one would do well to remember the method and apply it where judgment seemed to indicate.

Podalic version will also be found applicable to certain brow and face presentations, and to certain cases of occiput posterior. The cases presenting these complications, which are to be treated by version, will also be determined by the judgment and skill of the operator. In fact, one method of delivery will take precedence over another method, when there is a question as to which shall be used, just in proportion to the ability and skill of the operator to perform the one better than the other. That is, a successfully performed version may be done by one doctor in a given case, while the same operation may be disastrous for baby and mother in the hands of another.

Other indications for podalic version are seen in prolapse of cord or extremities; in cases where the head is floating at the superior strait, or is only slightly engaged, and where high forceps would be the alternative. I can not help but feel that high forceps should never be used if there is any possible chance

for a version, and I believe any one can do version better than he can apply high forceps.

Another indication for version is found in certain cases of eclampsia and hemorrhage, where the cervix is dilated, or readily dilatable, and where it is urgent to quickly empty the uterus.

Another *supposed indication* for version is what I beg leave again to call a pseudo-indication." I refer to the use of podalic version, or Potter's version, as a *routine* method of delivery. This will be referred to again presently, but let us say here that the infant mortality of one of Potter's disciples varied from 8 to 17 per cent. (De Lee).

THE CONTRA-INDICATIONS FOR VERSION to my mind may be outlined as follows:

1. Version is contra-indicated unless the cervix is completely dilated or easily dilatable.

2. Version is contra-indicated if the membranes have been long ruptured and the amniotic fluid drained off.

3. Version is contra-indicated in a tetanically contracted uterus.

4. Version is contra-indicated in marked pelvic contraction and in cases of hydrocephalus.

5. Version is contra-indicated as a *routine* method of delivery, which is proved by the statistics of one who is more skilled in its technique, and who has, perhaps, performed more versions than any other living man—Dr. Irvine W. Potter, of Buffalo.

In his report of 1,113 cases Potter shows an infant mortality of 6 to 7 per cent. There were 920 versions and 80 Caesarean sections—entirely too many sections—out of 1,113 cases.

The point I wish to emphasize is the fact that Reed reports 6 per cent. infant mortality in his 200 cases of bags, and that Potter reports 6.7 per cent. infant mortality in his version cases. Both of these men are experts in these respective methods. Reed has 2 per cent. and Potter 2.7 per cent. greater infant mortality than is considered normal. If we combine these two increased mortalities, we have an increased infant mortality of 4.7 per cent. Furthermore, I feel sure that we will necessarily get a certain additional, indefinite, mortality when we routinely use *both* bags and version in the same cases, for, when we use a combination of these two things in one and the same case, our mortality will be greater by using two ar-

tificial means on the same patient than by using them singly on different patients.

Dr. Potter, in speaking of bags, says he is opposed to the use of bags to induce labor, since they do not give the obliteration of the cervix desired nor the dilatation of the os that is required.

Dr. Edward P. Davis, Philadelphia, says: "I am glad to know we have learned that a dilating bag can not dilate the uterus successfully, because it does not favor retraction of the cervix uteri."

Dr. De Lee says: "For Dr. Potter's method of delivery I have no sympathy. His own declared results condemn it. His own published mortality of 1,123 cases, including 80 Caesarean sections, is about 7.5 per cent of the babies. This is much too great and these women are paying too high a price for their relief from pain in the second stage. At Chicago Lying-In Hospital, in the last 9,258 cases, we have had a gross mortality of 336, or 3.6 per cent. This includes all premature children, after the seventh month, weighing 1,000 grams or over, all macerated fetuses (86), monstrosities, and also those children born alive and dying before the mothers left the hospital", etc.

I have very carefully selected a number of cases on whom I have performed Potter's version. I have also selected a number in whom I have put bags to induce labor and dilate, after which I have completed the delivery by Potter's version.

Personally, I do not think we are justified in the routine use of either bags or version, but I do believe they both have their place in obstetrics, and version should often be performed instead of a difficult forceps delivery.

CONCLUSIONS.

1. The dilating bag is an indispensable part of the obstetrician's armament, but should only be used in cases of definite indication.

2. It should be remembered that the use of bags is not without danger, that they do not always induce labor, and that they increase the frequency of operative termination.

3. Time and physiological dilatation, with nature's bag of waters intact, is the only way that cervical injury can be minimized.

4. As Polak says, "Version has a distinct place in obstetrics but can not be considered an elective procedure in normal cases."

5. Lastly, in view of the greatly increased mortality and morbidity resulting from these

two artificial means, I feel that we who do obstetrics should use our influence against their use as a routine method of delivery, especially in the hands of the inexperienced.

TIME AND TUBERCULOSIS.*

By CHAS. HARTWELL COCKE, M. D., Asheville, N. C.

TIME AND TUBERCULOSIS.

Tuberculosis presents a problem so omnipresent, so intimately associated with the daily life and activities of almost everyone, so many sided and extensive, so expensive and so difficult—yes, so ubiquitous and ever-challenging—that it behooves us at times to take stock and see if we are progressing and how. With most scientific gains in the progress of medicine there is a coincident loss,—let us see if a counter-balancing one in the case of the care for and prevention of tuberculosis, for by knowledge of gains we gather inspiration for further progress; by counting losses we can avoid unnecessary sacrifices.

IN RETROSPECT BRIEFLY.—Until Villemin's work on the infectiousness of tuberculosis and Koch's discovery of the tubercle bacillus, the general hopelessness of the outlook for the victim of tuberculosis was almost universal, and not unnaturally so. Koch's great discovery, which Klebs came so near making, at once aroused enormous hopes in all interested in the subject that now with the cause of the dread disease definitely known the cure would be but a short time later found. Quite a natural hope but one to be sadly disappointed. Then, some nine years later Koch announced the discovery of tuberculin which he hoped and believed had specific curative action in early cases. Again, disappointment followed in the wake of those using this powerful agent who did not know the true nature of the agent they were using and how it produced its effects; so disastrous indeed at this period that soon reaction set in and a period of disuse and abuse set in which only patient years of study and careful observation with much controlled experimentation have been able to overcome. I need not recite here the controversy that has raged ever since over the therapeutic use of tuberculin. Suffice it, that one unfamiliar with many of the finer diagnostic points and manifestations of tuberculosis and the effects

of tuberculin upon it *should never attempt its therapeutic administration*. As a test, one rule only I think need here be stressed, but that I stress with all the emphasis at my command; a positive tuberculin reaction indicates tuberculous infection and not necessarily disease in the clinical sense! Nor am I concerned here to discuss the varieties of tuberculin, even to the latest, Much's so-called "partigens", for to Much's claims we must give until further information is available the Scotch verdict "Not Proven".

Real progress in the treatment of tuberculosis may be said to have begun with the institutional treatment of it. The work of Trudeau in this country, and Brehmer and Dettweiler and their followers will ever be one of the shining lights that illumined a dark horizon for many a poor soul. Here at last seemed some ray of hope that the problem of the cure of tuberculosis and its prevention was on the way to solution. Emphasizing the cardinal necessities of discipline, rest, proper diet, (which by-the-way is not the over stuffing of the former enthusiastic era, but a well-balanced nourishing diet, taken regularly and supplemented by such liberal additions of milk as can be comfortably taken and assimilated), fresh air, cleanliness and carefulness, as well as cheerfulness, the treatment soon became more or less standardized and with such astoundingly encouraging results that a word or two of added emphasis to the meaning of these principles may be in place, for unfortunately I find them still nebulous in many minds.

BY WAY OF EMPHASIS.—By rest, in our present day conception, we mean rest of mind, body, and soul. Nor can you afford to let your instructions to your patient go at that. You must teach him that bodily rest means rest in bed, prone at first and until fever, rapid pulse, any signs of blood spitting, harassing cough, night sweats, dyspnea, losing weight, or other expressions of toxemia are long things of the past. Visiting friends whose keen desire to divert the really sick tuberculous patient by frequent or long visits often narrating all the calamities and sad or bad news of the day, have frequently in their ignorance done much harm with their well meaning zeal. Rest in bed (on a sleeping porch preferably) is in my experience the one great place for the tuberculous patient to work out the philosophy of his cure, for there he must learn that business worries,

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cares, and troubles, domestic anxiety and upsets, family disharmony, the fretting over lost time and opportunities, the so-frequently present financial embarrassment with prolonged idleness in store, the trouble incident to his family caused by his illness, and the thousand and one bugbears that beset his mind and besiege his soul, must be placed aside and behind him if he is to make the proper improvement, and he alone with the guiding hand of the wise physician and the co-operation of his family, can thus work out his physical salvation. Worry, anger, emotion, too eager interest in outside affairs, as well as too insistent but irritating zeal and anxiety on the part of a member of the family, have spoiled many a man's chances of arresting his tuberculosis. I can only here briefly intimate the importance of this part of my subject, and might with advantage make the paper entirely pertain to this most important essential of treatment, but my time is limited.

And pardon me if I insist again that the era of the over stuffed patient has gone, I trust and believe never to return. No one article of diet is essential, though some are nearly so, but any carefully well-balanced, easily digested and assimilable one with plenty of milk, will usually suffice, but by all means have it tempting and attractively served and moderately abundant. Remember you are dealing with a consuming disease (hence its old name—consumption) for one of the very frequent and often earliest symptoms is lost weight, the result of the fat-splitting qualities of the tubercle bacillus and quite frequently the appetite is jaded and must be appealed to. Your patient must eat as it is sometimes facetiously but truly said, enough for himself and his germs too, to overcome the deficit caused by their activity and restore the lost balance of his physical savings account.

I wish I had time to speak of fresh air, of cleanliness, the proper method of baths and their frequency, of cheerfulness, of general hygiene, and all that your patient must be taught of the care he must observe for himself and for the protection of others, but time presses. I can only stress that you must remember that you are treating a *man* with tuberculosis, and not tuberculosis afflicting a man. There is no one golden rule but I have two and you doubtless have others just as valuable:—1st, the

age old maxim, *festina lente*, make haste slowly, for a month or more longer in bed if necessary may be much better, and in the end a great deal cheaper and shorter for a patient than a day up too early, and 2nd, forbid everything not specifically allowed. By this last rule I mean that you cannot assume that the patient knows anything about the rules to be observed, the things to do and not to do, the dangers to avoid, and the real limitations necessary upon his activities. So, therefore, insist that he so order his life in every detail that he be dependent upon permission for even the slightest indulgences of effort, recreation or amusement, business or exercise. Let him realize that in you his ship of health has a pilot, firm yet kind, understanding and sympathetic if a bit tyrannical, and that as his course is charted through many troubled seas, observance of fixed orders or rules is his best and sometimes only hope of a safe haven. The picture of the arrest of tuberculosis is a mosaic,—let no little slip or error mar the finished work. And this too takes time and patience for both doctor and patient.

In this all too brief and inadequate summary of what has come out of the sanatorium treatment of patients with its insistence on discipline and rule, let us not in our enthusiasm for the wonderful results obtained assume that this is the whole story. Coincident with these improvements was the wide-spread interest in health and hygiene generally. Better housing laws, improved sanitation, health activities in general, and numerous clean up campaigns in particular, have tended to lower the mortality rate of disease in general as well as of tuberculosis.

SOME FAULTS AND FAILURES.—While sanatorium treatment has thus far given our most satisfactory results in tuberculosis management, why have these results not been uniformly better? In the first place, in any institution there is the great danger of too rigid adherence to routine and the almost impossible optimum of personal attention to each individual case that gives the best result. Frequently undermanned, generally over worked, the medical and nursing staff must of necessity fail to reach uniformly the best results of which they are capable. Again, the allotted stay of each patient in the ordinary sanatorium is much too short to accomplish good temporary, much less lasting, results. Whether

his residence be in a municipal, county, state, or endowed institution where funds are always limited and hence the benefits of residence must be apportioned to the greatest possible number with the resultant shortening of the all important stay of the individual, or whether he be in a private institution where the cost is apt all too soon to become a burden impossible of carrying sufficiently long, the patient is soon forced to the realization that for him tuberculosis is first and foremost an economic problem before it is a physical one. The longer the delay in beginning treatment, the longer and more costly the time necessary for restoration to working efficiently if not good health.

Since it is so generally accepted that all things else being equal, in the great majority of cases the chances of arresting tuberculosis are in direct ratio to the earliness of discovery and the institution of proper treatment, why is tuberculosis not always diagnosed early? According to Armstrong, writing after four years of the Framingham demonstration, the causes of failure of early discovery seem to be the following—"the recluse type that never receive medical attention; failure of the patient to seek medical advice or to give the physician adequate time for a proper diagnosis; failure of physician and patient to use all services at their command for the early recognition of tuberculous disease; and the lack of complete annual factory and school examinations."

To one feature only of this I wish to call attention, and that is our responsibility as physicians in the failure to recognize tuberculosis when it offers greatest hopes of good results. Why do we sometimes fail? To begin with, I grant you that up to within very recent years the whole subject of tuberculosis was so inadequately taught in our medical schools that one left the medical college with only the vaguest notion of what constituted an early diagnosis of tuberculosis, and probably none at all of how to make it. The same criticism might apply to other diseases in the art of diagnosing which men have perfected themselves since leaving the medical school—why have they not learned tuberculosis? To begin with, faulty or inadequate history taking must bear some of the opprobrium of our failures. No man is too busy for a careful anamnesis; if he is, his assistant can and prob-

ably will do it better, and no man is going to find tuberculosis early unless he *hunts for it*. And that means that it must ever be in one's thoughts where the history suggests a disease without immediate definite manifestations that point to something else. Next to faulty history taking I place too limited or superficial observation. Because, perhaps, of the very indefiniteness of the patient's symptoms and his appearance of health and failure to show much external evidence of disease, it is too easy to dismiss the patient with a look at his tongue, a pat, a pill, and a pulse reading. Temperature observation every two hours over the waking hours for several days, made by the patient himself, will not infrequently give information of great importance. An occasional temperature or one taken casually in the office is rarely of benefit save possibly to emphasize the necessity for more careful observation. This observation too should extend over days and weeks, and even months if necessary, and under conditions of rest and exercise. It does not consume any of the busy doctor's time—but it *pays!*

And then the physical examination. I do not expect of the busy general practitioner that he will be expert in the minutiae of lung examination, but I do expect him to be capable of careful inspection where any inequalities of posture, of musculature, or expansion are readily discernible; to be so reasonably adept in the very difficult art of percussion that moderate changes in resonance can be appreciated and basal expansion of the lungs determined with sufficient accuracy to give him needed information; to have sufficient familiarity with lung examination by auscultation that he knows how to elicit rales and where to look for them if they mean tuberculosis; to be honest and thorough, suspicious and zealous; to examine sputum not once but many times and to realize that while the presence of bacilli in the sputum means tuberculosis, the failure to find them is not disproof of the presence of active tuberculosis, and if he waits for their demonstration he has possibly lost the patient's best opportunity for arrest; to call to use the X-ray, whose value Doctor McRae has told you about today, and, finally, if still unable to make a diagnosis, not to hesitate to avail himself of the services of one more experienced and perhaps more skilled in pulmonary examinations. I have avoided

mention of the tuberculin test for the obvious reason before mentioned that when positive it is an evidence of tuberculous infection and not necessarily disease, and its proper interpretation is quite difficult at times. Nor do I make mention of complement fixation for the same obvious reasons.

And all of this *takes time*. I grant that the diagnosis of tuberculosis early is not easy, in fact with advancing knowledge I agree with Lawrason Brown who says that the diagnosis of tuberculosis is becoming increasingly more difficult. But your failures will be in inverse ratio to the time and thoroughness of study of suspected cases, and let me once more urge you to keep tuberculosis always in mind as a possibility.

ON MATTERS OF DEBATE.—I repeat this with all emphasis for I think I discern evidence that there are certain writings, if not teachings, of late that would lead us after false gods. I trust the pendulum of the tonsil, teeth, focal infection delirium is swinging back nearer to the fundamental truths. That focal infection does play a role and an important one in systemic disease I willingly grant, but I trust we are getting away rapidly from the furor of tonsil dissections and tooth extractions of a few years back that sacrificed many innocent as well as diseased tonsils and teeth with an unfortunate and sometimes disastrous result upon many a sufferer from tuberculosis.

Of late we hear much talk of the rale as an evidence for or against activity. This does not seem the place nor have I the time to enter a discussion upon rales and their significance, but two facts seem to me worthy of consideration here. First, that rales may exist without the presence of clinical activity although their presence in association with symptoms is of course evidence of activity; and second, that activity does exist frequently without the presence of rales. The presence of clinical activity means that the patient is suffering from some of the symptoms that are present in tuberculosis, but remember that rales are objective evidence of some pathological change which may or may not indicate clinical activity while symptoms are subjective or objective evidence of clinical activity. A patient, in other words, suffers from symptoms and not from signs elicited by the examiner. And since these signs may or may not be

present and may or may not be elicited, I say that many more cases of tuberculosis exhibit evidence by symptoms of clinical activity than even the most skilled and experienced examiner cannot at first, and possibly for sometime to come, detect the signs of. The conclusion, therefore, is inescapable that such cases must be treated on the assumption of the presence of active tuberculosis. Experience would seem to have taught that the hardships incident to such an assumption in the cases proven to be something other than tuberculosis are infinitesimal in comparison with the dangers of delaying a diagnosis until all the evidence is so overwhelming in favor of tuberculosis than even the third year medical student would have no hesitancy in announcing the result.

CLIMATE AND TREATMENT.—We have come a far way in our journey after truth in assessing the value of climate in the treatment of tuberculosis. From the day when countless numbers sought the arid West or the mountains elsewhere held to be beneficial to the tuberculous seeking in blind faith and supreme hope the balm of healing breezes and died like flies on the plains because of the failure to appreciate the essentials of proper treatment, we have come to the time when some men deny the value of climate. The truth, as is generally the case, is somewhere in the golden mean. That pulmonary tuberculosis may be arrested in almost any climate today is a proven fact; that certain climates do not possess especially helpful qualities is too rash a statement to stand unchallenged. In our present state of knowledge, the definition of the ideal climate for tuberculosis is impossible, nor is it essential for this discussion. For factors even more important than climate in the vast majority of cases determine the result. Why certain climates enjoy the reputation for efficacy they do is fairly simple. They usually have sufficient altitude with large enough diurnal temperature variations to have that quality which for a lack of a better term we call bracing. Humidity and rain fall are or may not be great, sunshine may be had in abundance, there is an absence of air pollution, outdoor living day and night may be indulged in, surface and subsoil drainage are usually excellent, while the existence and nature of its forestry doubtless also have their bearing. I am not attempting, as I said before, the definition of the ideal climate, but

wish to call your attention to one fact that has impressed itself upon me since I have been engaged in the treatment of tuberculosis, and that has to do with the failure sometimes of the home physician to get results similar to those gotten in a specially favored climate. One of the chief factors in bringing this about as I see it is the unwillingness of the patient to surrender himself as completely and for as long a time to the judgment and care of the physician at home as he will do to the one to whom he has been sent possibly many miles to consult. *In tuberculosis there is no greater fallacy than that the patient is as well as he feels.* For immediately the patient feels well and perhaps regains his lost weight, he wants to order his life on the assumption that he is well and can return to his former habits of life and business. A further difficulty besets the home physician, and that is the almost universal attitude of the patient at home who wants to be *made well* incidentally while he pursues his usual course of life. When sent off to a climate this same man is willing to make *getting well his business* and other things then become incidental. But going off to a climate in search of health at once brings up the economic side of the disease, which is a primary factor either at home or wherever treatment is undertaken, for it really does not matter so much about the physical condition and amount of tuberculosis if there is not the financial ability to meet the necessary requirements of rest and abstention from work. The man who cannot obtain the care, necessities, and comforts away from home to which he is entitled and accustomed, and who is ever menaced by an empty purse, is much better off at home and stands a much better chance of arresting his disease than he would have in the best of climates. A realization of this is in my opinion a fundamental in the decision to send a patient off in search of health. For comfort, rest, pure air, nourishing food, and proper hygienic management are still the essentials of treatment, and these must he have.

TIME AND ITS TOLL.—Anyone who has engaged in tuberculosis work for any length of time will soon be forced to the conclusion that of all the essentials of treatment for permanent results the *one great item is length of time.* When our chairman asked me to address you, I felt so keenly the importance of this that it was with difficulty that I restrained myself

from making this the burden of my remarks. There is no easy road to health for the tuberculous, there is no short cut. Efforts to shorten the length of time necessary to devote to the arrest of the disease are almost always harmful and sometimes disastrous. Tuberculosis is a disease of regress and progress, and he who would always avoid the dread problem of the relapse is he who learns his lesson best that as Rome was not builded in a day so is the arrest and cure, if you please, of tuberculosis the result of many months and years of patient waiting, careful living, conscientious adherence to those principles of what are his limitations, and the avoidance of those excesses of work, worry, and indulgence that spell failure in the end.

SUMMARY.

I realize that I have briefly presented to you, and I greatly fear all too poorly, a few facts and some thoughts that I trust will engage your attention and aid in the discussion of this great subject of tuberculosis. Conscientious as I am that I have given you nothing new, nothing startling, I yet hold that time has given some truths about tuberculosis that cannot be over emphasized, and these things I hold to be true.

That tuberculosis, protean in its manifestations, widespread in its incidence, for time forbade a discussion of our failure to reduce the incidence of morbidity though we are hopeful because of lowered and lowering mortality rates, disastrous in its consequences and ever menacing even today, is a subject that should engage the thought and study and zealous interest of every medical man.

That time and study are necessary for its detection, and only by early discovery can we hope for the best results.

And that while we have no specific for its treatment, yet experience has taught us fundamental principles that are necessary for success and that if this success is to be lasting and more than that of the brief moment, time, much time, is essential.

107 Citizen Building.

Chicago Has New Health Commissioner.

Dr. John Dill Robertson has resigned as health commissioner of Chicago, a position he held for seven years, and will be succeeded by Dr. Herman N. Bundesen.

TREATMENT OF GONORRHEA IN THE MALE

By C. B. PRITCHETT, M. D., Danville, Va.

Gonorrhea in the adult male is a self-limited venereal disease. That is, it will, under favorable conditions, run its course as a purely local affair, and subside without any treatment whatever. I am satisfied that a large percentage of the acute cases would terminate favorably, after a few weeks' time, if the patient is immediately put to bed and no treatment whatever given except restricted diet and forced water. Unfortunately, however, the average case with which we have to deal comes to us after having already received various insults in the form of patented medicines and "sure shot" abortive treatments. Furthermore, a vast majority of the well-educated practitioners in medicine are accustomed to look upon gonorrhea as an ignominious and unimportant disease, dismissing the patient with a few words of warning against ophthalmitis, and a prescription for some sort of an injection, with orders to treat himself.

There is nothing more satisfactory than the course of treatment involved in anterior urethritis when you are able to get your patient at the very onset, and can secure his cooperation in what *not to do*. But those of us who have had experience with the very slow and unsatisfactory improvement in urethral conditions due to gonorrhea, under the treatment they receive universally, will agree that there is room for improvement in the treatment of this disease as conducted by the average practitioner. This dissatisfaction with the results of our treatment has led me to interest myself very considerably in the pathological conditions involved. As practical as my observations have been, it is almost impossible to translate my findings into words. One general point, however, will cover the entire proposition. It is the one rule without an exception. All *local* treatment of urethral gonorrhea implies a certain mechanical violence. Even the gentlest injection or irrigation of the canal traumatizes its walls. The success of local measures requires one of two consequences from this procedure; either it must be in itself beneficial, as sounds and dilators or the high frequency treatments and massage in chronic gonorrhea, or the bad effects of the trauma must be more than compensated for by the good effects of the elements contained in the

drugs used. The only guide for the second class of treatment is to keep your patient under constant observation and study carefully the local condition from day to day. Should there be no lessening of the discharge and discomfort in a reasonably short time, your efforts are certainly producing no good effect in the elimination of the disease and should be promptly discontinued or at least greatly modified. Of course this does not apply to certain recurrent chronic conditions with old dormant foci, in which case it is sometimes wise to employ irritating measures to induce an acute outbreak in the hope that they will prove beneficial in spite of that irritation. Of course the immediate effect is in the nature of a relapse and during the stage following the severe treatment, measures are taken which are calculated to soothe the urethra.

From the foregoing conclusions, I make it a custom in the management of my local treatment in urethritis, to be governed by this rule: whatever aggravates the urethritis is bad treatment; and no matter what degree of success I may have met with in a similar case, I do not carry it further. There is a great variation in the sensitiveness of urethras. There is an individual tolerance for practically all of the drugs employed, and the treatment of gonorrheal urethritis will succeed in direct proportion to the gentleness of manipulation.

Hygiene plays a very important part in acute gonorrheal urethritis. Though experience of Army and Navy surgeons is quite convincing in that the average case was rather milder and ran a shorter course than in civil life, this is doubtless due to the restrictions which forbade indulgence in alcohol and prohibited physical exercise and sexual excitement. Also, these patients were all on light diet and for the most part were kept in bed until assigned to duty. The actual treatment employed depended entirely upon geographical location; in some cases it simply consisted of methylene-blue, Lafayette's mixture, some preparation of balsam, or perhaps simply urotropin, with argyrol and permanganate of potash leading the list as popular irrigations. The results obtained were really creditable and it is interesting that the vast majority of these men were treated by hospital corpsmen. To me, the most important feature is that they were not *over treated*.

There are hardly two practitioners who em-

ploy exactly the same method in acute gonorrhea. Some lay great stress upon general medication, while others pay no attention whatever to this feature. Personally, I make use of very few drugs, and seldom resort to diuretics. Dr. Edward L. Keys recommends making the urine alkaline, and forcing water as a diuretic. I find this a very satisfactory routine and usually give a solution of bicarbonate of soda three or four times a day and specify some special lithia water, as these patients are invariably over anxious that something be done, and like to be taking something. If burning persists, it is usually promptly controlled by Tr. hyoscyamus. I will take up the merits of several irrigations later. If the inflammation is extensive, the meatus swollen and the urination painful, local treatment of any kind usually fails to control the attack. This should be deferred until the intensity begins to wane. A safe rule to follow in borderline cases is that the patient who is not rapidly improving under local treatment is actually soon going to get worse, and all local procedures should be discontinued. Any increase in pain, or evidence of epididymitis, or in fact any complication, is also a signal to discontinue local attack.

By carefully watching the voiding in "the three glass test", one is quite likely to find a little pus in the second urine passed in a large proportion of gonorrheal cases. Acute posterior urethritis usually appears without symptoms and this is the only evidence found. Although some very good men recommend instrumentation for this condition, I believe that any such procedure is strongly contra-indicated. I have tried this to my sorrow, and have seen a great many patients who had suffered at the hands of entirely conscientious family physicians who had ill-advisedly passed a sound through an acutely inflamed urethra, or who had gone to the trouble to verify the probable presence of a posterior urethritis by a peep through an endoscope. The posterior urethra may be perfectly well medicated by injection into the anterior, and with very little pressure at that. A little of the injection, by gravity alone, always trickles into the posterior urethra and this is usually all the treatment required.

Even in the most satisfactorily subsiding cases of acute gonorrhea, one should not neglect early and frequent rectal examination,

especially if pus appears in the second flow of urine. Evidence of acute infection of the prostate consists of a tender and slightly swollen gland. One should avoid severe palpation, and massage at this stage is very unwise. Irrigation of the rectum with a double current tube, using a quart or two of water about as hot as the finger can bear, is often very beneficial. This should be continued even should the prostate go on to suppuration. Hot sitz-baths are also worth while. Should there be continued fever and a palpable gross suppuration, as recognized by the finger introduced into the patient's rectum, the condition becomes surgical. Or, if there is a retention of urine not relieved by a single passage of the catheter, more radical procedure is indicated. On one or two occasions I have gotten satisfactory relief by aspiration of the gland, passing a fairly large needle in the midline between the scrotum and the penis into each lobe of the prostate. In a few cases I followed this by injection of Cano's serum (which is phenol in methylene-blue), but have discontinued its use since I did not find it of merit. Suppuration of the prostate begins as multilocular miliary abscesses which usually break down and coalesce. In early involvement the chances are that aspiration will be fruitless; however, even the puncture of the capsule with a needle seems to be very beneficial in relieving pressure.

In the treatment of acute epididymitis I find the formula employed at Bellevue Hospital of New York most satisfactory. The essential features are as follows:

1. The higher the testicles are elevated, the sooner the patient will get well. The best way to elevate them is by a good substantial *adhesive plaster* bandage; I know of no commercial bandage sufficiently strong to produce the desired effect.
2. If the patient has any fever, he should be confined to bed until the temperature has been normal for 48 hours.
3. All treatment of the urethra and internal genitalia should be discontinued during the course of the epididymitis.
4. If decubitus and elevation of the testicles do not relieve the condition at the end of a week or so, operation according to Hagner's technic should be performed.

Systemic gonorrhea is a fairly rare complication. At the onset the use of vaccines or serums may be worth while. I have tried out

quite an assortment of the specific and non-specific forms which have been recommended to me. In favorable cases a temporary benefit, and sometimes a permanent improvement, may be had if these are employed in sufficient dose to give a systemic reaction, but as a general thing these treatments do not appreciably influence the course of the disease. It seems that joint involvement is dependent upon a susceptibility of the particular joint affected and not to the direct genital infection. It is noteworthy that with recurrent gonorrhea the same joint is most likely to give trouble, if there has been a previous arthritis. After the joint has become well involved, about the only beneficial procedure is the use of a very heavy cast sufficiently bunglesome to completely immobilize the limb and anchor the patient in bed. This should be kept on for two weeks, removed for a period of from 7 to 10 days, and re-applied. Under such treatment it usually takes from six weeks to three months to effect a cure. However, this compares quite favorably with the other treatments reported. The idea of removal of focus of infection does not hold good in the case of gonorrheal arthritis, as, in the hands of the very best urologist, vesiculotomy and vesiculectomy have produced most discouraging results. During the course of this cast treatment, it is inconvenient to bother with the urethral gonorrhea; as a general rule the treatment goes along quite as successfully if nothing is done towards curing the local focus.

The victims of gonorrhea are divided into two classes: "those who get well, and those who do not." Recoveries are limited to those individuals whose lesions due to the gonococcus have been sufficiently superficial as not to cause grave scars, or excite chronic catarrhal conditions. Spontaneous cures are dependent, as in all infection, upon good surgical drainage. If in the process of the disease there is an involvement of the vesicles, of the prostate, or of other urethral glands, of such a degree as to cause infiltration about the orifices of their ducts, bringing about a dilatation beneath, or if deep ulceration produces scar and stricture formation of the canal, we have a loss of drainage and in these pockets the gonococci linger. It is these lesions that are the cause of chronic gonorrhea. So far as the patient is concerned, his condition is just about the same whether the gonococci persist or

whether they are replaced by some other bacteria. Microscopic examinations of prostatic secretions, or "morning drop", in which the gonococci are not found, serve simply as a basis to give advice as to possible infection of others. So far as prognosis goes, they are of little value. Finding the Gram-negative intracellular diplococcus simply means that your treatment must consist of locating the lesion and treating it directly plus employing gonococidal agents. One important point, however, is that whenever the gonococcus is present in chronic urethritis, the urethra will resent even the mildest trauma, and will show its resentment by the sudden appearance of an acute urethritis, prostatitis, or epididymitis coming on suddenly during the course of treatment. In dealing with chronic gonococcal urethritis, it is worth while to give the patient a chance to get well by himself without interference. Spontaneous cures are often brought about by simply removing the irritating treatment being employed by some enthusiastic physician and directing your attention to improving the man's general condition. I am satisfied that I practically cured one such case by eight doses of cacodylate of soda, hypodermically, with no other treatment whatever. Many of these cases are being held back by some chronic malady, such as nephritis, cystitis, diabetes, tuberculosis, or even oral sepsis and tonsillitis, which have not been recognized, and are bearing on the patient's vitality. It is usually safe in this type of case to supplement the treatment by an occasional prostatic massage for the mental effect. If after a reasonable time no improvement is noted, more violent measures should be resorted to. Sounds of a calibre just snugly grasped should be passed and as a rule over-dilating of the urethra should be avoided. Usually an infiltrated point along the canal will be bruised or cracked and, if these contain gonococci, a discharge will have appeared by the following day. Daily irrigations of 1-5,000 permanganate will usually cause this to subside in a short while, after which a smaller sized sound should be passed and the irrigations continued. Three or four such treatments followed by three or four outbursts of acute urethritis, should result in a cure, evidenced by the fact that no discharge is produced by passage of sounds or endoscopic applications of weak solutions of nitrate of sil-

ver. Of course the patient should be kept under observation for some time afterwards and endoscoped at intervals. Lesions of chronic gonorrhea are usually multiple and complex; roughly we may divide them into involvement of the mucosa, the sub-mucosa, and of the various glands. The mucosa may present infiltrated, eroded, or ulcerated areas, or may be the seat of granulations, ulcers, infiltrations, or erosions may extend into the sub-mucosa, in which case scar tissue is formed after healing takes place, and strictures result. These are best spotted by the gripping of a bougie. Breaking these up by forced passage of sounds is considered a very bad procedure, internal or external urethrotomy being the method of choice. The chronic involvement of the glands is usually a mechanical thing and is due to obstruction of the ducts from thickening. The prostate and seminal vesicles form a special problem of drainage due to their complicated structure, and retention of purulent secretions within them is fairly satisfactorily handled by proper massage and stripping. This procedure should be kept up once or twice a week as long as the microscopic findings show the presence of pus.

Now, a word or two regarding a few of the newer drugs employed in irrigation of sub-acute urethritis. Of late, the literature has been rich in articles about the merits and demerits of acriflavine and mercurochrome-220. I have given them each a fair trial and am free to confess that I do not consider either of them more desirable than the old silver preparations. I do not consider that either one of them has been sufficiently tried out to warrant any definite conviction as to its value. As a germicide I have found mercurochrome-220 to be the more efficacious, and have gotten splendid results in *B. Coli* infections of the bladder, using it in strengths of 1-1,000 and 1-750. I have not found it irritating in even stronger solution. Theoretically, it should be the long-looked for specific for gonorrhea, as it is an antiseptic in combination with a tissue stain of deep penetrating properties, is non-toxic in fairly strong solution, and possesses a low degree of irritability. Perhaps with improved technic it may yet prove to be a tremendous contribution. I have found it a splendid germicide in 1-100 strength in impetigo contagiosa and as a wet dressing for stitch abscesses. I have discontinued its use in urethritis. At present, it would seem that

acriflavine, 1-5,000, injected once daily and retained for one minute, has the desired effect upon specific urethritis. It is my custom, however, to supplement this with a daily irrigation of permanganate of potash, so my observations are not conclusive. Some time ago I had several unfortunate results from using it in stronger solutions; a too rapid checking of the discharge evidently produced posterior involvement by stopping the drainage and allowing it to extend inward. It has the advantage of rapidly clearing up the discharge, but often fails to get at the gonococci in the deeper layers of the mucous membrane and often permits urethritis to become chronic.

644 Main Street.

THE MANAGEMENT OF CHRONIC NEPHRITIS.*

By WYNDHAM B. BLANTON, B. A., M. A., M. D., Richmond, Va.

Seventy-five thousand deaths are registered annually in the United States from chronic nephritis. As a cause of death it is exceeded only by tuberculosis and cardiac disease. Chronic nephritis is then a startlingly common and fatal disease. A glance through our current medical literature is all that is necessary to convince one that the last word has not been said concerning any part of nephritis. I have, therefore, no apology to offer for presenting this subject to you today, although on first thought it might appear commonplace.

CLASSIFICATION: For the proper consideration of our subject, a classification of nephritis is desirable. This is not an easy matter. There have been about as many classifications as there have been classifiers. Pathologists have lined up on one side with such classifications as glomerular, tubular, arteriosclerotic and interstitial nephritis. Clinicians on the other hand have advanced functional classifications such as hypertensive and nitrogen retention nephritis, nephritis with œdema, and nephritis without œdema. Some speak loudly of nephroses, and others are equally as noisy about their nephritides, and there has been very little agreement among so-called authorities. The truth is the so-called clinical types, when examined by the pathologist at autopsy, have not conformed constantly with any pathological classification and, in fact, we have ex-

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pected too much simplicity from so complex a disease. Still among all this disagreement it is essential that we have in mind some simple workable arrangement of our cases of nephritis. We have, therefore, adopted a rough and ready classification into two broad groups, namely, those with œdema and those without œdema. The first, of course, corresponds to the so-called glomerular or parenchymatous nephritis; the second to hypertensive or tubular nephritis. This is the classification of Christian and to our mind the most reasonable.

PATHOLOGICAL BACKGROUND: The management of any disease which is not predicated upon an accurate knowledge of the known facts in the etiological and pathological background is doomed to failure. This is particularly true of a chronic disease, such as nephritis. We have nothing very definite, though much hypothesis, concerning the cause of this disease. The acute infections, such as scarlet fever and diphtheria; poisons, such as lead and alcohol; foci of infections, such as dental root abscesses, infected tonsils, sinuses, etc., have much to commend them as probable causes. Intestinal intoxication, diet, anaphylaxis from such food as egg albumen are more speculative. Says Christian, "We can rarely do more than guess at a cause." At the same time we must be excused for our beliefs and prejudices in the absence of an accurately and certainly demonstrated etiology; and because we cannot prove step by step the relationship of an infected tooth or an infected tonsil to a small red granular kidney or a patient with the clinical symptoms and signs of nephritis without œdema is to my mind no reason for failure to remove such a focus of infection, and some of us I am sure have noted improvement when acting on such a common sense impulse. Chronic nephritis with œdema is a much rarer disease and much more rapidly fatal than chronic nephritis without œdema. It usually has a more definite onset and can be more closely related to such infective diseases and processes as we have just enumerated. Chronic nephritis without œdema is a more complex disease, with the heart and the blood vessels playing a prominent part, and often eventuating in that striking termination, uremia. These things are rarely true of nephritis with œdema. I believe it is the consensus of the best thought that he makes a mistake who re-

gards nephritis as a disease of the kidney alone. Nephritis, as we know it, is far more complex and based upon a pathology far more extensive, involving many more organs than the kidney. He who has made many autopsies on nephritics, particularly nephritis without œdema, has seen arteriosclerosis, cardiac hypertrophy and dilatation, valvular disease, pericarditis, gastritis, cystitis, cerebral sclerosis and œdema and many other signs and mile posts of the ravages of a cause, the nature of which we know all too little, but the effects of which tell their own story in every organ of the body when viewed at the autopsy table.

It is my belief that chronic nephritis is the result of a single large or a series of small toxic insults to the body—in the form of chemicals such as alcohol and lead; or bacterial poisons such as produce injury to the tissues and organs of the body on a wide scale, but manifesting itself especially in its damage to the exposed and particularly susceptible renal cells. We encounter nephritis in the various stages of this intoxication, whatever it be. In general, the rationale of therapy should be directed at (a) a search for and elimination of every possible source of ingested and absorbed poison. (b) Protection or sparing of the remnant of the renal epithelium by transferring the burden of excretion from kidneys to intestines, skin and lungs, and by controlling the intake of water, salt, proteins and extractives which are considered to be handled by the kidney with difficulty. (c) The removal or betterment of harassing or dangerous features and complications such as œdema and hypertension. There is, of course, nothing new in this point of view, but the systematic and careful following out of this rationale is often neglected.

Even though we attempted a detailed consideration of the treatment of nephritis, time does not suffice for a complete discussion of all phases of this interesting subject. We can, therefore, hope only to touch the high points in such time as we have.

EARLY CHRONIC NEPHRITIS: The onset of nephritis, as we have said, is so insidious and spread over so long a time, particularly in nephritis without œdema, that the patient himself is unaware of its presence until it is well advanced. It is a well known fact that hypertension, presaging as it usually does, nephritis is first discovered in life insurance ex-

aminations, or first made out by the careful general practitioner who makes it a rule to take blood pressure readings on his patients past forty years, who perhaps come to him for only some trivial complaint. The discovery, therefore, of this disease during this stage is up to the general practitioner or the family physician and with him rests the responsibility for the diagnosis and care of the nephritic in this most amenable stage of his disease. I think it wise to regard every constant elevation of blood pressure above the normal as potentially nephritic. So, when we find hypertension or thickening and tortuosity of palpable arteries with or without albuminuria or casts in a patient who considers himself well or who may complain simply of feeling unduly tired with occasional headaches and a little shortness of breath on exertion, we face the responsibility of apprising the patient of the seriousness of the situation and the necessity of doing something about it.

This is no occasion for the alarmist. A straightforward review and interpretation of the facts and of the possible progression of the case will convince most people of the necessity for the rearrangement of their physical household. These are not the cases for drugs. I am convinced that, after the facts have been put squarely up to the patient and his co-operation elicited, it is most important to give him in written form certain dietary and hygienic directions which he agrees to follow. Such a patient should avoid excesses of all sorts, under-eating rather than over-eating. He should limit his fluids. He should avoid alcohol. He should use tobacco with discretion. He should work less and play more. He should discipline himself in the avoidance of all worry and excitement. He should see that the emunctories are properly functioning. He should take a midday rest. He should be in bed from nine to ten hours at night. He should keep himself in the best physical condition, caring scrupulously for his teeth. Most important of all, he should have a definite time to report to his doctor, not less frequently than once in every three months.

ADVANCED CHRONIC NEPHRITIS: The second group of cases is well advanced with both symptoms and signs which are unmistakable, and functional tests, which in the first group afford very little information, begin to show kidney deficiency. These patients come to the

doctor because they are sick and it requires no urging to elicit their co-operation. I think it wise to consider the treatment of advanced chronic nephritis according to the classification we originally adopted into groups with and without œdema. I do not believe in a haphazard symptomatic treatment in this stage of the disease. There is no room for therapeutic nihilism any more than there is occasion for a blind and hypertrophied faith in drugs. The patient demands that something be done for him and there is much that may be accomplished. The rationale of treatment in this stage of the disease can best be considered under the following headings.

1. *Hypertension:* Measures that we have outlined in considering early nephritis are applicable in the treatment of moderate grades of high blood pressure. However, dangerous elevations, 250 or more systolic, accompanied by headache and dizziness, demand more energetic treatment. We should appreciate and keep in mind the limitations under which we labor. We cannot hope to permanently reduce blood pressure in the great majority of cases. We may expect, however, to temporarily lower it while other therapeutic agencies are put into operation which may arrest the progress of the disease and thus, in turn, help to reduce the level of hypertension to such a point that the patient will no longer have symptoms. The effect of rest in bed, inducing both mental and physical tranquility, the calorically lowered diet, especially in protein and the limitation of fluid intake, are of course the first essentials and are too well known to you to merit further discussion. The effect of sweats in reducing blood pressure is generally well recognized. I stop long enough to emphasize the importance of this measure and to register my preference for the dry pack gotten by the use of hot water bottles or electric pads with blankets, as opposed to the more troublesome and uncertain wet pack. Phlebotomy is of undoubted service in reducing blood pressure. I have recently in ten minutes reduced a blood pressure of 270/160 to 120/80 by removing 500 cc. of blood. This method requires a good deal of judgment in its use. Its value in emergencies of extreme hypertension is undisputed. But the frequent use of phlebotomy where the emergency is less acute subjects the patient to dangerous ænemia. I think the mistakes of phlebotomy are two: In an emergency we do

not remove enough blood, and when we do and get a favorable response, we are apt to repeat the procedure too often. My experience with vaso-dilators has not been encouraging. The majority of the authorities seldom find occasion for the use of any of the nitrites. Spinal puncture: While of course this procedure does not lower blood pressure it often relieves headache, which is one of the most distressing symptoms of hypertension. Some men are most enthusiastic in the use of this procedure. The results that I have obtained have been on the whole disappointing.

2. *Toxemia*: Eliminative treatment is of course based upon the fact that we believe in the presence of a poison or toxin in the blood and tissues which is probably responsible for the kidney damage. If we can induce other body agencies such as the skin, intestines and lungs to take over this part of the kidney's function we are attacking the trouble almost at its source.

First: Elimination through the intestines is effected by the wise use of cathartics, particularly of the salines. If the patient is made to understand that his bowels are to move well every day, if necessary by the use of a daily cathartic, that once a week he should take a brisk purgative, and once a month calomel in sufficient dosage to effect the same thing, enough will have been done to promote elimination by this channel.

Second: Sweats, of which we spoke under the heading of hypertension, of course, may be used to increase elimination through the skin. A sweat bath once a week may serve this useful purpose. Warm clothing, warm climates, moderate exercise accomplish the same end. No advice should be emphasized more strongly than to avoid the sudden chilling of the body. I have recently seen a case of chronic nephritis precipitated into a second exacerbation by exposing himself on a cold day at a foot ball game.

The impression is certainly prevalent among many men that if we can stimulate the kidneys to a more copious secretion of urine, particularly in cases of low output, we are increasing elimination and thus helping perhaps in the arrest of the disease. Dr. Samuel Lambert is one of those who advocates the forcing of water, expecting by this means to push through the kidney rapidly in dilute form poisons which might otherwise injure it. Most men, however, feel that the elimination of

water in excessive quantities is in itself a burden to the kidney sufficient not to warrant flushing by this method.

The use of diuretics with somewhat the same object in view is now generally condemned on the basis that few diuretics are without injurious effects per se upon the renal epithelium. Why flog a fagging horse to greater effort? It is believed that outdoor life and sleeping with open windows promotes pulmonary ventilation, and certainly we should urge these things upon our patients, that the eliminative capacity of the lungs may be used to the utmost.

3. *Sparing the kidney*: An injured organ needs rest. A nephritic kidney should be spared the performance of all its known functions in as large a measure as possible. We know that the glomerulus excretes water and salt and we believe that the tubules are chiefly responsible for nitrogenous elimination, and that all of these things represent work on the part of the renal epithelium. We know that drugs such as lead, mercury, cantharidin, tartaric acid, oxalic acid and others represent injurious agents, likewise, extractives and condiments in the diet. How then are we to spare the kidneys? First, by limitation of fluid intake roughly to twelve hundred c.c. (1 quart) in cool weather, and eighteen hundred c.c. (1½ quarts) in warm weather. Second; the limitation or interdiction of salt in the diet—salt free butter, salt free cooking, etc. It is surprising how quickly patients learn to get along without salt and relish food that is prepared without it. Third; limitation of the protein intake, particularly of the purins. I do not believe in the absolute contra-indication of meat. The patient should be instructed in the limitation of his meat according to the stage of his disease, but to tell every nephritic that he is not to eat meat is to deprive him of valuable food without sufficient justification. I think the point needs to be emphasized that fish and fowl are as much meat as beef and pork, and I think that the distinction between white meat and red meat should no longer be passed off on patients for their confusion and wonderment.

Epstein has recently described a type of nephritis in which he claims to have gotten astonishing results by protein (meat) feeding. The cases he described show increase of blood lipoids or fats and low protein content of the blood plasma. They uniformly have œdema

and the low protein and high blood lipoids are presumably responsible for the accumulation of fluid in their tissues. This type of patient must be extremely rare, Epstein to the contrary notwithstanding, as many good men have failed to duplicate his results.

Fourth; all medicines calculated to irritate the kidney should be used with extreme caution, and no drug whose renal action is unknown should be lightly administered.

NEPHRITIS WITH OEDEMA: Many measures applicable to the treatment of nephritis without œdema may at times be indicated in nephritis with œdema. There are, however, certain outstanding additional problems.

(a) The treatment of œdema itself. Oedema is a water logging of the tissues, the exact nature of which is obscure and puzzling. In some cases it appears to be due to the failure of salt excretion. The body, in order to keep its tissues isotonic, or to keep the salt in normal concentration, is compelled to retain all or most of the ingested fluid and, having no other store house, puts it away in the tissues and body cavities. This explanation is best suited to the œdema of nephritis. The œdema of heart failure is mechanical from venous back pressure. The œdema following certain drugs, such as morphine, is due probably to injury of endothelial cells. The angioneurotic œdema has been ascribed to nervous influences. In the treatment of œdema in nephritis the essential thing to remember is that swollen ankles and puffy lids do not represent the entire amount of retained fluid. Oedema is generalized in the great majority of cases, as any one will find on weighing patients before and after its disappearance. In treating this important symptom two essential observations are necessary as a guide in the use of therapeutic measures. Without careful frequent determinations of the weight of the patient to see how much fluid he is losing, and without measuring and recording daily the amount of fluids he has taken in and the amount of urine he has put out, we have no certain way of knowing whether we are succeeding or failing. Oedema is often dangerous, especially when it involves such locations as the penis, larynx, uvula, neck, tongue, brain, lungs, optic nerve, etc. In the treatment of œdema, several factors have to be considered. First, no more fluid should be given the patient than is absolutely necessary in order that no increase may occur in the tissues. The sharp limitation of fluid is there-

fore the first indication. Second, elimination of salt from the diet removes what appears theoretically to be the most important factor in the causation of œdema, because as we have said, when the kidney fails in its secretion of salt, NaCl accumulates in the tissues and quantities of water must be retained by the body to keep it in harmless dilution. A Karel diet, eight hundred c.c. of milk per day, for a short while accomplishes both purposes. Third, the elimination through the skin and intestines by sweats and cathartics is again from this point of view important and often effective. Fourth, rest in bed, promoting as it does better mobilization of blood and lymph by the cardio-vascular system favors fluid elimination. Fifth, drugs. It is the consensus of the best opinion that drugs are valueless in the treatment of essential nephritic œdema. There is no question about the fact that such diuretics as caffeine, diurin, theosin, and digitalis do at times result in astonishing elimination of fluid through the kidneys of water logged patients. But it is our belief that in all such instances the œdema was cardiac in origin. In fact, one of the accepted methods of differentiating between cardiac and nephritic œdema is in this therapeutic test.

(b) Foci of infection: As we have said, nephritis with œdema is more apt to reward a search for a tangible, etiological factor. Therefore, in this disease it is particularly important to examine teeth for root abscesses, tonsils for the presence of pus and to search for infection in the para-nasal sinuses, the prostate and other known sites of foci of infection.

(c) Anemia in this type of nephritis frequently demands treatment and I know of no better method for the administration of iron than in Bland's pills.

Symptomatic Treatment is equally important in all types of nephritis. Headaches, dizziness, palpitation, dyspnoea, indigestion, constipation, weakness, should each and all receive careful attention and merit our best skill in symptomatic therapy.

EXTREME GRADES OF NEPHRITIS demand all our skill and patience. Bed ridden and hopeless cases they are, often bordering on uremia, but nevertheless I believe deserving of our best thought and effort. The measures we have enumerated in the treatment of less severe cases of nephritis are of course applicable here. However, they must be applied in more heroic fashion. It is often surprising to see a patient

on the verge of uremia with blindness, extreme hypertension, astonishing nitrogenous retention, and scarcely any phthalein excretion, improve, get up and go about among his friends again. To see a single such case is sufficient to justify and reward all the labor and disappointment over all the other unsuccessful terminal nephritis that we may have been called upon to see.

300 West Grace Street.

HEALTHY TONSILS

By WILLIAM C. MOOMAW, M. D., Petersburg, Va.

So much has been said and written about tonsils that one feels some hesitancy in bringing this subject to your attention, or in attempting to add opinions to those already expressed. However, the frequency of discussion and the Babel of voices and views bespeaks dissatisfaction with our present knowledge of the status of the tonsil in relation to its function, pathology and treatment, and of its relation to certain diseases presently to be mentioned. It is my humble opinion that through some oversight in diagnosis, through some fatal breach in examination for causes, the tonsils have, in a large measure, failed to be fully recognized as potent factors in the origin of such disturbances as nephritis, arterial changes with arterial hypertension, intracardiac affections with subsequent valvular insufficiencies, arthritis, neuritis, so-called "rheumatism," goitre, and such vague clinical manifestations as malaise, headaches, mental hebetude, mental depression, fatigue, cough, constipation, indigestion, body pains, neuralgias and contractures; in a word, all of the long catalog of complaints and clinical disturbances which may and do arise from a focus of infection.

The appendix and the teeth have far outstripped the tonsil in the race for recognition as menaces to good health, and in breaking through a wall of doubt and prejudice on the part both of the laity and the profession; nevertheless, I fear not to prophesy that this prejudice will ere long break down in the light of facts, and the tonsils, whether faucial, lingual or pharyngeal, whether apparently healthy or manifestly diseased, will be removed with the same liberty of custom and for the same wise reason that a so-called healthy ap-

pendix is removed when the surgeon is operating in that region. This is neither fad, fancy nor fanaticism, but a carefully drawn conclusion based upon hundreds of cases presenting all types and stages of tonsils and consequent end-results; based, furthermore, upon careful study, treatment and observation of these cases, and based still further upon a review of many cases treated through fourteen years of general practice, and treated without any special knowledge of the throat and its structures along classical lines and often with poor results to the patient and painful disappointment to me. I now know, that with a cursory glance at the throat, many cases presenting tonsils which stood as grim barriers to health, were either overlooked or excused.

That so-called "healthy" tonsils have borne an unsuspected role as a causative factor in the diseases mentioned, and in other conditions, such as eye disturbances, bronchial and pulmonary infections, throat congestions and inflammations, involving the eustachian tubes and the ears; and that as such factors of these several diseases the tonsils have been under-estimated and overlooked by the rank and file of medical men the world over, I have no doubt. When we contemplate our present knowledge of infection—a word that may be stamped in red letters on almost every page of any comprehensive work on etiology or pathology—and when we recall the keenness shown in ferreting out indicated but often hidden foci of infection, it is an inexplicable mystery that the tonsils have escaped the searchlight of modern diagnosis and been allowed to "get by."

Therefore, it is the prayerful aim of this paper to stress the importance (1) of recognizing these structures as a source of disease. (2) of carefully scrutinizing the character and the condition of the tonsil under examination, and (3) of clearly establishing its particular relation to the clinical picture which the patient presents.

We frequently hear on the part of our patients such expressions as "Healthy tonsils," or "The doctor said my tonsils are all right," or "My tonsils never give me any trouble." What are healthy tonsils? In the first place, let us recall that men of unquestioned authority, notably Bosworth and others, insist that the lymphoid growths of the upper air passage, namely, the faucial, lingual and pharyngeal tonsils, are from first to last pathological

*Read at meeting of Southside Virginia Medical Association in Petersburg, December 20, 1921.

growths and, as such, should be removed. Most of us agree as to the lingual and pharyngeal, but how about the faucial tonsils? There are some pertinent facts that add strength to the view of Bosworth:

(1) The tonsil is not developed until late in fetal life, and it frequently becomes diseased early in infancy, so much so that it is the practice of some leading pediatricists to remove the growth as early as at six months of age. (2) The tonsil is so frequently the seat of focal infection and the source of systemic disease, designating it as a pathological rather than a physiological structure; or it is frequently hypertrophied and in some way not as yet clearly worked out, leads to maldevelopment and even malformation of the body, and particularly of the face, giving rise to the so-called "adenoid face," and, further still more seriously arresting mental development to which we shall again briefly refer. (3) After the removal of these growths, in the majority of cases, the structural development and body functions proceed along more normal lines, and the patients improve in appearance, usually gain weight, and, if the age of self-interpretation be attained, profess to feel better. (4) Radium in several applications over the region of the faucial tonsil will cause it to rapidly disintegrate and largely disappear; having, however, no such effect upon the normal structures adjacent thereto. (5) In so far as my limited knowledge goes, no one has, as yet, been able to assign, clearly and conclusively, any necessary or even hypothetical function to the tonsil. If these be facts, they point stubbornly to the tonsil as a useless growth and, as such, a menace to good health and long life.

In the second place let me remind you that tonsils which appear to be above suspicion, will, upon proper examination, spring a surprise upon the unwary examiner. No reputable dentist of today would be willing to pass final judgment upon teeth under examination without first submitting them to the "acid test" of the X-Ray, and similarly no tonsil should be dismissed until it has been subjected to rigid examination by one of several approved methods; as, for instance, the Hurd pus evacuator by which very innocent tonsils may be drawn out to view, and the lacunae shown to contain putrid and foul-smelling detritus and frequently pus. These expressions from the tonsils will yield cultures of the most virulent

organisms such as staphylococci, streptococci (both viridans and hemolyticus), pneumococci, Klebs-Loeffler and a number of the catarrhal types. Let these structures be judged by the company they keep. It does not conform to the demands of logical thinking to hold, as is often claimed, that tonsils act as barriers to infection, and arrest, as does a lodge-gate keeper, undesirable pedestrians entering private grounds. We view with suspicion, and even alarm, the presence of such infectious agents in the tissues elsewhere in the body.

In the third place, tonsils which may be considered to be fairly free from an inflammatory process may and do bear a pathological relation to diseases of the throat, eustachian tube and the ear. To quote from a recent text-book: "The permanently enlarged tonsil offers obstruction to nasal respiration, and gives a distinctly nasal tone to the voice, and may interfere with correct speech. These enlarged masses also produce venous stasis in and around the pharynx, particularly on the posterior and lateral pharyngeal walls. Deglutition is interfered with and, during the act of swallowing, food may occasionally regurgitate into the nasopharynx. The crypts of the tonsil harbor foul secretion, which at times is expelled in the form of small pearls, which when crushed give rise to a most disagreeable odor. Owing to the diseased condition of the tonsil, absorption results in enlarged cervical glands which at times become painful. Hypertrophied tonsils induce considerable eustachian catarrh, not only by direct pressure adjacent to the eustachian opening, but by producing venous stasis in that region, they prevent proper pharyngeal ventilation and drainage of the secretions. Enlarged tonsils occasion frequent attacks of indigestion, and the patient, particularly children, are often anemic, badly nourished and nervous." So far, so good. But, I cannot refrain from quoting one more sentence from this same writer which is a context to what has just been read. He writes, "It cannot be too often insistently repeated that the existence of a considerable degree of hypertrophy of the lymphoid tissue in the oropharynx as well as in the nasopharynx is quite consistent with a satisfactory state of health." To me this is a glaring inconsistency in statement of facts, and I here mention it because I believe it typifies a bias of mind which stands as a barrier to a scientific study of this question. "A satisfactory

state of health." Who but an ignorant man or a fool would be content with a "satisfactory" state of health if it were at all possible through applied principles of preventive medicine to obtain *perfect* health?

If we could bring ourselves to a comprehensive grasp of the prevalence, the pathogenicity and the menace of focal infections, it would be superfluous to urge the facts herein set forth. Diagnosticians everywhere and in all branches of medicine would follow the lead of a few who have provided themselves with the equipment for, and familiarized themselves with mouth and throat examinations. Dr. Lewellys Barker, in *Monographic Medicine*, states that "Gingival and periodontal infections are among the commonest causes of disease in people past middle life. The physician who fails personally to inspect the gums and teeth of his patients, under good illumination, and to call skillful dental specialists to his aid in many cases, will surely fall behind in the race of medical practice." With perfect reason Dr. Barker could have included the tonsil in this indictment. He did say in regard to chronic tonsillar infections that *flein*, *diurin*, *theosin* and *digitalis* do at times be small, adherent, or buried. * * * The condition is often first suspected owing to the co-existence of metastatic arthritis, endocarditis, or nephritis. Small abscesses are frequently found when such tonsils are excised. Such primary foci of infection should be carefully sought for in all cases of chronic invalidism." My plea is to be cognizant of such foci of infection, search for them, remove them, and thus *prevent* such cases of chronic invalidism.

The studies of Bell, King, Rosenow, Rehfuss and Cotton on focal infections are extremely interesting and show that this subject demands the most careful consideration. Dr. Geo. A. Bell in a paper on "Teeth, Tonsils and Toxemia," said "The work of Cotton among the insane at the New Jersey State Hospital is especially illuminating. Infections and toxemia, as Cotton has previously pointed out, are shown to have been the most important contributory factors in producing mental disease. To the extraction of teeth as well as to operations on the tonsils and other organs in the body, Cotton has attributed his success in being able to discharge 274 patients out of 410 cases which had been admitted."

With the foregoing facts clearly before us,

and ever mindful of the very great prevalence of acute and chronic focal infections, and the frequency with which the tonsils are hosts of such infections, the tonsils (and the teeth should here be included) must be examined with the same regularity and persistence with which we examine the pulse or the blood or the urine.

The equipment for examining the tonsils is a simple one. A good light (preferably a reflected light), a tongue depressor, a pillar retractor, and a Hurd pus evacuator are all that is required. The evacuator is indispensable in studying submerged tonsils. Most throats will admit of its use with very little gagging or discomfort. When the glass bell is snugly applied over the tonsil, and the compressed bulb released a seemingly small and obnoxious tonsil is drawn from its fossa and often a startling revelation of infection is made. The sterilized fore-finger is the best instrument with which to examine the pharyngeal tonsil. If gently done it occasions no pain and little discomfort.

Upon examining the tonsil, if the pillars are found to be red, that redness means inflammation and inflammation, as you know, means infection as may be shown by smears or culture; and *if the pillars, particularly the anterior pillar, be markedly red, pus will almost invariably be found upon enucleation of the tonsil*. I should here like to sound a warning against being governed by the size or macroscopic appearance of the tonsils. When the tonsil is manifestly bad, as in acute tonsillar attacks, the patient himself will make the diagnosis. It is often the small, submerged, and frequently buried tonsil that harbors a chronic, insidious infection. This is a fact of prime importance that should be kept constantly in mind, and it is concerning this type of infection that it may sometimes be said of the watchmen and custodians of Health's estate, "While they mused the fire burned."

With your permission I shall now report several cases from the records of some five hundred patients whose tonsils were removed. *These cases are in no way unusual, and are typical of conditions which may be found in the every day round of examinations in any average general practice.*

CASE 1. Mrs. W., Dendron, Va., 45 years of age, married, home-keeper. Was referred with the advice that she had been suffering with "rheumatic" pains for eighteen months. A

number of her teeth had been extracted with little or no relief. It was stated that she seemed to have no tonsils, but nose and throat examinations were requested. The pillars were found to be inflamed as shown by marked redness, and the tonsils to be of fair size, and containing free pus which was expressed from the crypts when suction was made. This case has not as yet been operated, but, in the light of a number of similar cases, it can be safely stated that the tonsils are the source of her trouble. It is here referred to that special emphasis might be laid upon the importance of searching for these buried tonsils, and of using some form of suction apparatus by which the tonsil is brought out to view.

CASE 2. Mr. C., Petersburg Va., 41, bachelor, bookkeeper. In 1913, was operated for pus kidney. In June 1919, patient was referred to me suffering with occasional headache, dizziness, depression and nausea. His ears were inflated with slight improvement, but his symptoms persisted. His tonsils were examined and found to be chronically infected and containing pus. These were removed. Patient immediately began to improve, has gained thirty pounds in weight, and to date has had no return of former symptoms. There is still occasional pus in the urine, which probably comes from the old ureter which was not removed with the kidney.

CASE 3. Mr. McR., Petersburg, Va., 22, unmarried, bank clerk. Had been suffering for years with muscular and articular "rheumatism." Was treated for hook-worm with slight improvement. Referred to me May 15th, 1919. Patient was anemic, manifestly sick, suffering greatly with pain, bent in form and walking with a cane. He had been thoroughly treated along the usual lines. His tonsils showed chronic infection and pus. They were enucleated. Within the week the patient felt marked improvement. The pain steadily disappeared, color was restored to his cheeks, and weight increased.

CASE 4. Mrs. M., 42, married, home-keeper. For some years had complained of neuritis in right shoulder, arm and hand. Suffered a great deal of pain, especially when using the arm. Even letter-writing occasioned pain. Patient had been treated for months, and had "tried all sorts of things," including osteopathy. Before trying the latter I had advised removal of the tonsils which were infected as shown by the usual signs in such cases.

Consent was finally obtained and the growths removed October 14, 1921, under local anesthesia. The symptoms have cleared up, the patient has greatly improved in general health, and informed me recently, with bubbling enthusiasm, that she had written a 16 page letter with perfect comfort.

CASE 5. Mr. B., 37, plant foreman, married. Had recurrent attacks of iritis. The usual treatment was instituted with no relief. Wassermann and other tests were made. Examination of the tonsils brought them under suspicion. The patient was sent to an eye man in Richmond for his opinion. The suspicion was confirmed, hence we removed the tonsils. In a few days the eye showed improvement and made a satisfactory recovery. The vision was greatly impaired by fibrosis of the retina and nerve head, but there has been no return of the attacks. The tonsils were removed thirteen months ago.

CASE 6. Dr. McC., Petersburg, Va., 35, general practice, unmarried. A few years ago, while practicing in northern New York, had tonsils clipped by general surgeon. For the past year had developed nephritis with hyaline casts and albuminuria. Gave up practice and went to hospital. Systolic blood pressure 230 m.m. After a time an examination of his throat was requested. The pillars were inflamed, but no tonsil in evidence. A tiny fistula was seen between the pillars on left side. Under local anesthesia these pillars were opened and a pus tonsil found and dissected. The same condition was discovered on the right side and similarly treated. Practically all "rheumatic" pains have disappeared, the blood pressure has been reduced, the doctor has resumed his practice and married. The kidneys are still affected though somewhat improved. With less alertness this throat could have easily been passed as negative.

CASE 7. Mr. M., Petersburg, Va., 48, active business, married. Had suffered for years with pain and stiffness of the joints, particularly in the mornings, dull headaches, and sometimes severe neuralgia of the scalp and pains in back of neck. Frequently had so-called rheumatic sore throat with redness of the structures; was chronically constipated and flatulent. The chief complaint was physical and mental fatigue, depression and, at times, melancholia. The patient was normally ambitious, energetic, and had always lead a uniform and even abstemious life. About three

months ago a trained nurse looked into his throat and told the patient his tonsils did not look right. Acting upon this suggestion he consulted me and I informed him his tonsils were chronically infected. He could not believe it for he had never had an attack of tonsillitis, nor acute sore throat. However, the tonsils were removed and pus was found in them. Today the patient informs me he never felt as well in years, the stiffness and pain in the joints have all disappeared, he looks better, has gained in weight, the depression has given way to real optimism and a desire to go at things. This case is cited because I believe it is typical of a large number of people who walk our streets daily, carrying this heavy burden of mind and body as a tax to one or more foci of chronic infection.

5 South Adams Street.

EVERSION FRACTURES OF THE ANKLE JOINT.

By JAS. W. GIBBON, B. S. M. D., Charlotte, N. C.

The commonest type of fracture involving the ankle joint is the eversion, or so-called Pott's fracture. It is equally the most serious injury to the lower limbs, and one demanding the most precise principles of diagnosis, reduction and after-care if the very disastrous and crippling end-results that invariably follow these fractures when neglected are to be avoided. There seems to have always been some confusion concerning the terminology and, possibly, in the classification of these fractures about the ankle joint. There has been a tendency to call all fractures in this region Pott's fractures, and this, strictly speaking and if we are to judge by the original description, is not correct.

It was in 1756 that Sir Percival Pott described the type of injury which came to bear his name. This same gentleman, having himself sustained the injury by a fall, gives his description from a very intimate knowledge and association. The lesions cited are a fracture of the fibula one to three inches above the tip of the internal malleolus, posterior luxation of the astragalus, and an extreme eversion of the foot. In reality then, a typical Pott's fracture is a dislocation fracture. Only a little experience with fractures about the ankle is enough to convince one of the great variety of forms they may assume. These vary

from the comparatively simple fractures of the lower end of the fibula and the internal malleolus without any visible eversion and no luxation, to the very serious injuries with not only fractures of the end of the fibula and the internal malleolus but with posterior luxation of the astragalus, marked valgus deformity, rupture of the tibio-fibula ligament, and great widening of the join. Still further in some of these more severe injuries there may be a longitudinal splitting off of the lower posterior end of the tibia which produces a deformity with great tendency to recur. Between these extremes there may also be a large number of different forms. Pott's fracture has been generally applied to any or all of these.

French surgeons apply the name of Dupuytren to the common as well as the unusual of these ankle fractures. The primary idea of Dupuytren was an upward displacement of the foot and shortening of the limb, the result of forcing apart the tibio-fibula articulation by the impaction of the astragalus between.

In the luxations about the ankle, Sir Astley Cooper spoke of the tibia as the bone dislocated from the astragalus and foot.

Now from these confusing and various injuries there seems to be the same mechanical principle at work in the production of any one of the types of deformity; and the wide variety in the deformities is a question simply of continuation of the mechanical force acting, and all of these injuries are only different degrees of the same process. All, accordingly, may be included under the term Eversion Fractures, since, as we shall see, this principle is present in each one. Dr. Jno. B. Murphy said "the variety of these lesions and the amount of deformity depend on the degree of eversion and the degree of the force exerted."

Simply stated, the cause is a fall on the everted foot. There is then violent forcible eversion of the foot, the structures on the inner side of the ankle yielding with either laceration of the internal-lateral ligament or, what is more frequent, fracture at the tip of the internal malleolus; the astragalus loosened from its mortise is driven outward and fractures the fibula one to three inches from the tip. With continuation of the force, the astragalus is still further driven laterally until extreme valgus is produced, the tibio-fibula ligament is ruptured and this articulation separated, thus widening the joint, and the astragalus may be impacted between the two bones. Such

tearing of the important ligamentous support about the joint greatly relaxes the articulation of the foot and it may drop back into a posterior position or be pulled back by the contraction of the powerful muscles of the calf. Should there be a splitting off of the lower posterior end of the tibia, this backward luxation is very much facilitated, and adds a very grave feature to the fracture. Therefore, with this mechanism of causation in view, it is not difficult to understand the variation in fractures about the ankle, and it is obvious that eversion is a principle underlying each.

Lesions of the vessels and nerves of the foot and ankle are not apt to accompany these fractures. Rarely is there injury to the bones of the foot, though not infrequently the fracture is compound, a sharp spicule of bone at the site of the break in the internal malleolus projecting through the skin.

The diagnosis is usually easy. In marked cases the foot is everted; if there is a posterior displacement, there is shortening of the dorsum of the foot and elongation of the heel backward. If the ankle is grasped with one hand just above the joint while the other hand is placed beneath the sole with the thumb on one side of the foot and the fingers on the other, just below the respective malleoli, abnormal lateral mobility may be quite distinctly recognized—the best single proof of ankle fracture. In the more simple cases without much external evidence of deformity, the three points of tenderness, which are rather characteristic, may be gotten; tenderness over the tip of the internal malleolus, over the lower end of the fibula, and over the tibio-fibula articulation. X-ray plates are of course conclusive and essential.

TREATMENT. Murphy said "failure to secure good result from treatment occurs more commonly in connection with Pott's fracture than with any other type of fracture except a Colles'." It is the opinion of Cotton that the usual causes of disability following fractures in this region are largely independent of the exact fracture lesions, but depend chiefly on two factors. First, is a deviation of the foot from the normal line of weight bearing, and this is present in all of these fractures to more or less extent. This line which normally passes down the center of the tibia should pass through the center of the astragalus, but, in eversion fractures of the ankle, it will be seen to fall to the inner side of this point. Second,

disability is due to loss of motion in the joint itself, and is the effect of stiffening of the joint structures, of excessive callus, or more usually of muscle stiffening from long disuse. Uncorrected deviation of the foot from the normal line of weight bearing ends in the most hopeless loss of function and distressing flat or pronated foot. Loss of joint motion becomes a constant source of lameness. Any plan of treatment to succeed must be directed chiefly towards the elimination of these two great factors producing disability. The first essential, therefore, in the treatment of these cases is a complete restoration of the normal lines of weight bearing, and this very obviously means early and proper reduction of the deformity, which will have already been ascertained by careful examination of the part.

In the method of reduction Murphy suggested "to follow in inverse order the movements in the production of the fracture." Therefore, start with the luxation as it was the last step in the fracture. When the luxation is posterior, increase the deformity by extending the foot as far as possible to unlock the fragments. Next, apply downward traction on the extended foot, making a skid of the upper surface of the astragalus, so that when you flex the foot, still making traction, the tibia easily slides back into position, and you know the dislocation backward has been reduced when the foot can be acutely flexed on the leg. Counter pressure in an antero-posterior direction may be made over the lower end of the tibia during this procedure. To be more graphic, handle the foot just as if you were taking off the boot of another. If there is a lateral luxation, with great eversion of the foot, and laceration of the tibio-fibula ligament with widening of the joint, they are corrected by forced inversion of the foot. When there is a longitudinal fracture of the lower posterior end of the tibia—a splitting off of the whole back edge of the tibial articulating surface—so that there is no obstacle to the posterior displacement of the astragalus and tarsus, the deformity becomes one with extreme tendency to recur, and one which adds much more gravity to the treatment, as has already been mentioned. In these cases, it is sometimes necessary to overcome the pull of the calf muscles by tenotomy or lengthening of the tendo-Achilles in order to secure permanence of reduction, as pointed out by Dowd.

Having reduced the deformity, whatever it

may be, by these methods, the re-position is maintained by the position in which the extremity is dressed. Whatever method of dressing is used must fulfill two essentials. First, the foot must be kept acutely fixed to a right angle with the leg, and second, the foot must be held in forced inversion. An efficient and easily applicable form of fixation is the use of the fracture box. The foot is laid on a pillow and placed in a fracture box with lateral pads, one against the foot below the external malleolus, and the other along the inner side of the leg two or three inches above the internal malleolus. These pads keep up the inversion of the foot. Then the sides of the fracture box are brought up and fixed firm and held with straps. As a rule, the tendency to displacement is only slight and the re-position is maintained readily in this way, the chief exception to this rule being in the class of cases mentioned, where there is an added injury to the posterior articular surface of the tibia. In some cases the use of a guttercast is possible, and entirely efficient, when the initial swelling is slight. It can be removed at will, allowing passive motion and massage, and then be re-applied. If the fracture box is used, at the end of a week a cast may be applied, and the patient allowed to get up in a wheel chair.

The next factor in the treatment regards the preservation of the joint function by the prevention of stiffening of the joint structures and atrophy and shortening of the muscles by disuse. Very properly this is an extremely important phase in the treatment. It involves a principle which is pretty generally accepted in the treatment of Colles' fracture, and yet, when it comes to the ankle joint, it is commonly neglected. It has long been considered essential that passive and active motion and massage be applied to a Colles' fracture at the earliest possible period following the injury in order to prevent the stiffened wrist and fingers so liable to follow these fractures. Though apparently without any reason, there has always been some hesitancy in applying the same principle to ankle fractures, and yet the method should be the same in both cases. To prevent, then, the loss of joint motion in the ankle, and the consequent impairment of function, the best rule to follow is not to allow it to establish itself—the same that we follow in the care of Colles' fractures. This is done by enough movement sufficiently early

to stop stiffening. Proper position is important and some fixation is necessary, but not enough emphasis is placed on this early motion. Three weeks from the time of injury, union is beginning and there is no tendency towards redisplacement, so we may then begin massage and guarded motion. In the less severe cases this may be begun after the tenth day. In the beginning, active motion is less likely to do harm than passive and is to be preferred. The plaster, therefore, should be removed once or twice a day and motion and massage instituted in order to insure supple joints, and this plan should be carried out for the rest of the time that the patient is under treatment. In very severe cases, cases that do have a tendency to redisplacement, the surgeon may combat the displacement with his hands during the manipulations. Cotton believes the danger of delayed union, or non-union, very slight when these methods are followed, but, of course, the surgeon with an intimate knowledge of the type of fracture he is handling must be his own judge concerning how much to do. At all events, it is along these lines that we must oppose the tendency to stiffening and loss of joint function in ankle fractures. Movement judiciously applied should be begun early and continued until discharge of the case. Massage of the soft parts to encourage active circulation of the blood is also important. Under this plan, limitation of motion tends to disappear, but if not begun until late, after fibrous changes have taken place, and the structures have become rigid, there is little prospect for them to lose their rigidity, and the disability becomes permanent. Stiffening is greater, of course, in the aged, though it occurs in children. However, in the child this rigidity of the joint is very apt to disappear as time goes on, but in adults, when once established, inflexible joints following fractures are very prone to remain unchangeable, and this rule becomes more iron-clad the older the patient. The Fracture Committee of the American Surgical Association, in an investigation of the results in the treatment of fractures in all parts of the country, discovered the influence of age on the functional result was of very startling significance. They found that 87% of children secure good functional result, while only 52% of adults obtain good function.

At the end of the second week, the patient

may be given crutches in most cases, but weight bearing should be prohibited until the fourth or sixth week. Then either a foot plate should be worn for a time, or, what is probably better, the inner sides of the sole and heel of the shoe on the injured foot should be raised one-quarter of an inch and three-quarters of an inch, respectively, for it is to be remembered that the tendency to weakened arch and pronated foot is almost universal after this fracture. Mowell says "you will get a very bad outcome as a final result from neglecting this after-treatment and care in a case that was almost perfect when the cast was removed." The purpose of this procedure is to throw the weight bearing-axis in the right direction, and by this is meant the direction to prevent any possibility of an increase in the abduction or pronation of the foot. Traumatic flat foot is the thing to be feared as a late result of these fractures, and this is the method whereby we combat it.

In regard to the operative treatment of eversion fractures of the ankle, little will be said because it seems to be the opinion of most men with large experiences that it is only indicated in compound cases, in old mal-united cases, and in certain of the more badly shattered cases. In the majority of the cases, care of the details in the treatment outlined should and does give good results. Tenotomies, wiring and the use of screws are advocated by some surgeons, chiefly English, but cases requiring these must be the exception rather than the rule.

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705 South Tryon Street.

A CONSIDERATION OF THE VARIOUS CAUSES OF HYPERTENSION.*

By F. C. RINKER, A. B., M. D., Norfolk, Va.

The patient with high blood pressure is always with us and both the internist and the surgeon are constantly being confronted with the difficulties commonly met in the treatment of hypertension. It is well for us, from time to time, to look back, correlate data, reconsider results and discuss the various points relative to a given condition.

The real cause, or causes of hypertension, have not as yet been fully explained, but there have been shrewd observations made by physicians, which have made us familiar with certain groups of patients in whom high blood pressure is probable and with many external as well as internal factors which tend to produce this condition, particularly in susceptible individuals.

It is true that the constitutional make-up and environmental influences often favor the development of increase in arterial tension. It is also admitted that heredity is of particular importance in the production of hypertensive states. Thus, patients are frequently spoken of as being of the apoplectic type; short, fat, short-necked, and plethoric and of a worrying, morose disposition. But these individuals certainly have some underlying factors as a causative agent when they become truly hypertensive patients and, after all, the hypertension is only a symptom of some disease, chronic or

*Read before the Seaboard Medical Association of Virginia and North Carolina, December, 1920.

acute, which differs in different cases. Authors speak of these underlying factors as being either vasomotor, neurotic, infectious, metabolic, or endocrine, in nature.

In reviewing a series of cases of hypertension studied by the author during 1920, the following report is represented:

There were 67 cases representing symptoms relative to hypertension only as a cause. This series showed marked increase in either the systolic blood pressure, or the pulse pressure, or both were increased in the same patient. The probable causative factors in these cases, aside from heredity and environment, were as follows

Age—Ranges from 40 to 78 years,

Sex—Female 42

Male 25

<i>Causes</i> —(1) Arterio-sclerotic	10
(2) Syphilis	1
(3) Endocrine	11
(4) Nephritis	16
(5) Infections	29
(a) Oral	18
(b) Cholecystitis	4
(c) Nasal	4
(d) Tonsillar	3

Of the arteriosclerotic group, numbering 10, one was improved by the use of general measures, six died of either cerebral hemorrhage or some terminal infection, and three are still living with little improvement in symptoms.

The one case due to syphilis was restored to normal by anti-syphilitic treatment and his symptoms and pressure have remained normal for many months.

The endocrine group. All females in the menopause state have experienced marked improvement following the administration of the endocrine products along with the use of general hygiene, rest, diet, elimination, and regulation of habits.

Those due to kidney disease. Two died, four not improved, five have improved somewhat, but none of the pressures have been reduced to any extent and all have to be watched exceedingly carefully.

Of the 29 cases due to infections, nineteen have improved to the extent of returning to normal active life and all of these nineteen report an increase in vigor and mental ability. Five have made considerable improvement and five remain unimproved up to the present.

DISCUSSION.

In selecting this series of cases, the author has picked out those cases from his records, in which there was only one probable cause for the hypertension found. Also, all of the cases have been followed closely and all have submitted to whatever treatment seemed necessary for relief of their high blood pressure.

In the arteriosclerotic group, there were no definite causes found which might have caused the arterial changes and it is noted that relief in these cases was practically none at all.

The one case of syphilis responded very rapidly to anti-syphilitic measures. The pressure in this case when first seen was systolic 220, diastolic 100, giving a marked increase in pulse pressure of 110. There was marked weakness, severe constant headache, tachycardia, considerable dyspnoea, and nervous symptoms were extreme. The renal functions and blood retention of nitrogenous products were within normal limits. Following treatment there was relief from all symptoms and the blood pressure was reduced to systolic 170, diastolic 120. The patient is 43 years of age and, for 8 months, has been attending to his business regularly and his systolic pressure has ranged from 148 to 170 with a pulse pressure of from 46 to 58.

The endocrine group have all made considerable improvement, such improvement beginning in a few weeks following the taking of endocrine substances plus general measures.

Those cases due to pathological conditions existing in the kidneys made little or no improvement and the treatment of this group of hypertensive patients has been very unsatisfactory.

The group of cases resulting from focalized infectious processes was the largest group of this series and, as a whole, the results of treatment have been quite satisfactory. It is the author's belief that all cases presenting symptoms and physical signs of hypertension should be thoroughly studied for the location of focal infections. Oral sepsis, infected tonsils and adenoids, para-nasal sinus disease, chronic appendicitis, chronic cholecystitis, prostatitis, and pelvic inflammatory disease should be looked for and, if located, should be treated surgically, whenever practicable.

It is not my purpose to enter into a discussion of the treatment of hypertension but, in enumerating the most important causes of this

disease, I cannot refrain from urging that whenever possible the underlying factors in these cases should be considered more seriously than merely the relief of symptoms by general measures.

CONCLUSIONS.

1. The real cause or causes of hypertension have not yet been fully determined.

2. There are many underlying factors which tend to bring on high blood pressure particularly in susceptible individuals.

3. It is of importance from the standpoint of prognosis as well as therapy that we determine whether the hypertension in a case is due to renal disease or not.

4. The removal of foci of infection from hypertensive cases results in marked relief in many instances and it is the duty of the profession to survey each case for hidden infectious processes.

5. The endocrines should be carefully considered in all cases of hypertension.

THE PREVENTION OF HEART DISEASE.*

By W. A. PLECKER, M. D., Richmond, Va.

State Registrar of Vital Statistics,

In the past, public health workers were accustomed to say that one-third of all deaths are due to preventable diseases and causes.

Today, while the means of prevention in all cases are not fully known, it is believed that the number of absolutely non-preventable causes of death is so greatly reduced that old age alone is left as the only really positively legitimate cause of death. Even old age itself may be robbed of much of its terror by a correct system of living begun in time, if coupled with freedom from inherited and acquired weakness.

Of the diseases especially prevalent at and after middle life, heart disease is both the most frequent and the most readily prevented. It is estimated that two per cent of the population of the United States suffer from serious heart disease, and that from one and a half to two per cent of the school children are so affected.

Organic heart disease is now causing more deaths than tuberculosis. Under twenty-five years of age, heart disease is more fatal than typhoid fever, while between twenty-five and

thirty-four years it is as fatal as lobar pneumonia. Between twenty-five and forty-four years, heart disease kills more frequently than Bright's disease. After forty-five years, heart disease is the most frequent of all causes of death. Insurance companies have discovered by a study of groups of insured lives that those suffering with organic heart disease have a death-rate of from fifty to one hundred per cent greater than the normal mortality for their ages.

While heart disease is of equal importance with tuberculosis, and as surely though not as directly prevented, it has up to this time received but scant attention except from the standpoint of diagnosis and treatment. Fortunately, however, though this purpose has not been in mind, the means used to prevent infectious diseases, and to discover and treat defective teeth, adenoids and diseased tonsils in school children are the most successful methods of preventing inflammatory rheumatism, and resulting heart disease.

In 1913 there were in Virginia 2,433 deaths from heart disease and 2,931 from all forms of circulatory diseases. These figures increased steadily until in 1918 there were 3,047 deaths from heart disease and 3,660 from all diseases of the circulatory system. If apoplexy is added to the latter figures, with its 1,790 deaths, the total deaths in 1918 from diseases affecting the circulation were 5,430 which is far in excess of all other groups except the diseases peculiar to early infancy.

The colored death rate from heart disease in Virginia during the five-year period from 1913 to 1917 was 161.3 per 100,000 population as against a white rate of 104.5, being an excess of fifty-four per cent.

There was a falling off in deaths from heart disease for 1919 of 470 as compared with 1918, and 481 less than in 1917. This would seem to indicate that the propaganda against diseased teeth and tonsils of school children, together with the lowering of the death-rate from typhoid and other infectious diseases is beginning to show in the lessening number of deaths from heart disease. It is not safe, however, to draw conclusions from the figures for one year.

Old age is measured not in terms of years, but by the condition of the heart and arterial system. All measures, therefore, which prevent and postpone the breaking down of the

*Read before the Southside Virginia Medical Association, in Petersburg, December 29, 1921.

circulatory system hold back the advent of old age, and add years to the period of usefulness of the individual.

The causes of damage to the heart and arteries may be placed in three general groups:

1. Infectious diseases.
2. Poisonings and intoxication of various forms.
3. Incorrect habits of living.

Of these, infectious diseases, including syphilis, are perhaps of greatest importance. The germs of these diseases may act directly upon the heart structures, or may do it, especially in early life, in connection with inflammatory rheumatism, which is now generally believed to be due to local infection originating in defective teeth, tonsils, adenoids, gonorrhoea, the auditory and nasal structures, etc. This focus should be carefully located and removed with the first attack of rheumatism, as these attacks are liable to recur, endangering the heart or increasing any damage that may have been previously incurred.

Modern methods of diagnosing and treating obscure syphilitic infection render it possible to discover and remove this condition, when without a Wassermann test its presence may not have been positively determined.

The term "growing pains" so prevalent amongst the laity should be discarded. Such pains should be recognized as early rheumatic infection, and receive prompt and vigorous treatment by salicylates, and by removal of the cause, likely to be found in diseased tonsils and teeth.

Many adults lead sedentary lives, getting little or no out-of-door exercise. They eat freely of meat which taxes the kidneys and provokes early circulatory changes. These should eat sparingly of meat and use milk freely as a nitrogenous food. They should be encouraged to indulge in out-of-door life and sports. Gardening in the morning and evening affords an agreeable and useful method of securing the exercise and change needed by men who toil at in-door occupations, while flower growing serves the same purpose for their wives. Golf and other not too violent sports, or various forms of nature study in the fields and forests, break the monotony and give the needed exercise in the open. These all tend to improve the appetite and digestion, cause the more free drinking of water, and resulting elimination by kidneys and skin. Hik-

ing is far superior to joy-riding, and may well be indulged in not only by boy and girl scouts but by their parents also.

An all sedentary life, over-indulgence in food, particularly of meat, the excessive use of coffee, tea and tobacco, with short hours of sleep in poorly ventilated rooms, coupled perhaps with business and other form of worry, all tend to prevent free elimination, and clog the system with various poisons which induce or increase circulatory changes.

During the winter months, the short hours of daylight and unfavorable weather conditions increase the natural tendency to sedentary habits. The results are shown in a study of 3,314 cases of acute and subacute rheumatism gathered from the records of four of the New York hospitals. These records show that the greatest number of cases occur during February, March, April and May. The popular idea that people are run-down in the spring months is based upon correct observation. Even in winter we may walk to and from our offices, and discover other methods of getting exercise in the open. The wood-pile, saw and ax make an excellent combination for this purpose.

From one and a half to two per cent. of school children will be found upon careful examination of the bared chest to have cardiac defects. The teeth, tonsils and adenoids of these should, of course, receive appropriate attention and, in many rural localities, hookworms are still further reducing their vitality. A special regime should be planned for such pupils by the family physician. The teacher and child should be instructed to arrange so as to avoid all excessive exertion and excitement. Such children may not safely engage in the usual rough games and may even enter and leave the room alone rather than in a push. Some of these should be temporarily taken from school and given a period of rest.

A frequent error is to dismiss too quickly and without proper examination of the heart, children who are convalescent from infectious diseases, and rheumatism, especially when the latter is a recurrent attack. Errors in the diet of children may retard nutrition and growth and lower bodily resistance to infection and diminish the recuperative powers. Bread and milk should constitute a large part of the diet of school children, and wholesome lunches should be provided for them, rather than such articles as pickles and candies which I have

seen a near-by grocer sell in large quantities to school children, large pickles being dispensed from an open barrel at a cent each.

OCCUPATIONS.

These vary from those who may safely carry on their usual occupations, unless subjected to unusual strain, to those so seriously affected that they can scarcely move about, or may even be confined to their chairs, not being able to lie down without discomfort. The majority, however, lie between these extremes, each patient constituting a separate problem, the amount of effort that each may expend depending upon the effect.

It is a safe rule that the occupation should require less effort than the individual feels able to put forth.

Absolute idleness is desirable only in advanced cases.

Emotional strains may be harmful and should be avoided, though less injurious than physical.

Women may usually perform their household duties, especially if washing and a few other hard tasks are not attempted.

We should remember that increasing symptoms are more likely due to the continuing source of infection, than to over-strain of a slightly affected heart.

SUMMARY.

1. Heart disease after middle life is the most frequent cause of death.
2. While less frequent in childhood, nearly two per cent. of school children are affected with heart disease in varying degrees of severity.
3. The most frequent causes of heart disease are the infectious diseases which may act directly upon the heart structure, but more frequently by producing rheumatism which is specially prone to affect the heart.
4. It is, therefore, a matter of special importance to discover and cure diseases of the teeth and tonsils, which are the most frequent causes of rheumatism, and to protect children from all infectious diseases.
5. All persons should endeavor to keep themselves in good physical condition by out-of-door exercise, sleeping with open windows, and by removing promptly any focal infection that may exist in teeth, tonsils, adenoids, appendix, gonorrhoea, ears, nose and surrounding structures.

6. Children as well as adults should avoid meat in excess, and should make milk an important article of diet, the food as a whole being wholesome and non-stimulating.

7. Tea, coffee, alcohol, and tobacco in excess, should be avoided.

8. The public should learn the importance of periodical examinations even though apparently well.

9. Incipient heart disease should be treated by removal of the cause, by sufficient rest to give nature an opportunity to restore the damaged organ, and by regulating the mode of life to meet the needs.

10. As a rule, patients with due care may continue their ordinary occupations, if not under strain, and emotional storms are avoided.

Correspondence

Tuberculin Testing of Dairy Cows

Norfolk, Va.,

February 21, 1922.

TO THE EDITOR:

While I am very reluctant to continue the controversy relative to the installation of the tuberculin tests for dairy herds and dairy and milk inspection and supervision in Norfolk, I feel that I cannot let the matter drop when the accuracy and authenticity of my statements are called into question.

On March 12, 1901, the Councils of the City of Norfolk passed and put into operation, as soon as the force could be organized, laws requiring all dairy herds from which milk was drawn to be sold in Norfolk to be tuberculin tested. This ordinance also provided for the employment of a dairy and milk inspector and regulated the sanitary conditions of dairies and the milk supply generally. Mr. Cromwell was appointed Dairy and Milk Inspector in June, 1901. He was succeeded in 1902 by Mr. Louis Harman, who is still with the Department of Health.

These ordinances are published in the NORFOLK CITY CODE, edition of 1902, pages 182, 183, 184 and 185, and can be seen by any person interested who will take the trouble to read them:

Section 338, page 182—Caption, "Sale of Certain Kinds of Milk Prohibited."

Section 339, page 182—Caption, "What Constitutes Pure Milk."

Section 340, page 182—Caption, "Milk Inspector; How Appointed; His Duties; to Give Bond," etc.

Section 341, page 183—Caption, "Refusal or Neglect by Inspector to Send and Deliver Portions of Samples of Milk Taken for Analysis," etc.

Section 342, page 183—Caption, "Milk Inspector to Frequently and at Irregular Intervals Make Inspections of all Dairies; How Often Made; Analysis to be Recorded," etc.

Section 343, page 183—Caption, "Inspector to Report all Violations of Milk Ordinances to Board of Health."

Section 344, page 183—Caption, "Sellers of Milk to be Registered in Books of Inspector," etc.

Section 345, page 184—Caption, "Insanitary Conditions of Dairies, Stables," etc.

Section 346, page 184—Caption, "Inspector May Prohibit Sale of Certain Kinds of Milk."

Section 347, page 184—Caption, "Board of Health Shall Prohibit and Prevent Sale of Such Milk Until Unsanitary Conditions Are Remedied."

Section 348, page 185—Caption, "Inspection of Cows Outside the City."

Section 349, page 185—Caption, "Cows to be Tested for Tuberculosis Duty of Owner."

Section 350, page 185—Caption, "Penalties," etc.

You will observe from the captions that this ordinance was a fairly complete and comprehensive one for 1901.

I reiterate that Norfolk passed a very good ordinance controlling the milk supply and providing by law for the tuberculin tests on March 12, 1901.

POWHATAN S. SCHENCK, M. D.,
Health Commissioner.

"Man's Inhumanity to Man."

Hopewell, Va.,
February 15, 1922.

TO THE EDITOR:

We read much about the scarcity of doctors in the country. That it is deplorable, we will all admit. Possibly there are reasons, though, why doctors stay in town.

Last night was bitter cold—sleet, rain, wind

and all the other ingredients the weather man could concoct to make a poor doctor miserable.

My car went bad on me—short circuit, lights gone—so I put her up for the night and repaired to the Du Pont Club, where was to be had a glow of warmth and good fellowship. When the miserable disturber pealed its loudest—a phone call—some one wanted a doctor at Cedar Level (midway between Hopewell and Petersburg). "You are not our regular Doctor; he is tied up in a case, but won't you please come; the patient is very ill," etc. etc.

Yawning, and with a "Dear me!" I went to the garage, pulled the night man out of bed, had him repair my wires, put a gallon of alcohol in the radiator, and, with the wind shield open, because it was impossible to see with it down, I wended my way to the one in distress. Arriving at the poor one's house, I was greeted with "It's too bad you had to make the trip. We finally located 'OUR DOCTOR.'"

Was I paid? No!

Was I invited in the house to get warm?
I WAS NOT!

J. C. BODOW, M. D.

Miscellaneous

Health.

Governor Trinkle, in his inaugural address, on February first, said:

"I feel that I should express to you my very strong interest in work for the conservation of health and prevention of disease. In proportion as people are well and strong, we may expect them to be happy, productive, and progressive.

"No tax upon the people is so oppressive and so unjustifiable as the tax that is levied by the preventable disease. We now know how most of the serious diseases are carried, and we know how to prevent their transmission. It is our bounden duty to utilize this knowledge.

"Disclosures of examining boards, here and abroad, during the war were shocking to all right-thinking people. No one had imagined that such a large percentage of young men in our country and in other countries were unfit for military service. It is no justification for us to say that Virginia was not notably deficient—that our trouble was the trouble of all.

"We cannot erase that record, but we can prevent its repetition. Health is largely a pur-

chasable commodity. We are not able to guarantee additional years to any one individual, but we are able, if we afford a sufficiency of prevention, to guarantee a longer average life to the people of a community or a State.

"As a concrete illustration, the record of the State Board of Health in reducing the number of typhoid cases from more than 14,000 in 1909 to less than 3,000 in 1920, and the number of deaths from more than 1,400 in the former years to 267 in the latter, is surely sufficiently illuminating. What has been done with typhoid and the other filth-borne diseases has measurably been done with other groups; and we may expect great results from the newly-instituted co-operative efforts of the health and school authorities with the children of Virginia.

"In connection with health matters we cannot overlook the serious scarcity of doctors in our rural sections; and, unfortunately, this is a condition which may not be expected to rapidly improve. It is, therefore, incumbent on our fellow citizens in the country to guard themselves. Wherever possible there should be active health organizations in counties, and I feel it a duty to urge upon all the people to heed the advice and obey the regulations of the State Board of Health.

"So far as our finances will permit we should be liberal in our appropriations for public health. This is a sound, economic principle. Weak and sickly people cannot compete with strong and healthy ones. We should be willing to make economies in other lines rather than ignore this health work which, humanity and charity aside, offers to a State the most certain and largest dividends for the amounts invested."

THE PHYSICIAN.

By EDWARD DABNEY STARKE, M. D., Norfolk, Va.

Down the village street he comes,
A kingly man is he.
A vigil he has kept all through the night,
But his heart is light and free.
Like a warrior, grimly he fought with death,
And vanquished his foe with the dawn.
So his heart is light, for the cares of the night,
Have vanished with the coming of morn.
The children gather around his path,
And clamor for his smile,
For they know as only children can know,
A heart that is free from guile.
In all the days of their innocent lives,
He has shared their pleasure and pain.
And they know, too, that his smile is true,
And strive that smile to gain.

He thinks as he sees that happy throng,
Of his anxious watch last night.
And knows that one little form would be still,
Had he given up that fight.
What need then has he for rest.
He has fought a good battle and won.
So he goes his way to the work of the day,
To toil till the day is done.

His step is firm, his eyes are true,
His hair like a silvery light,
His voice is gentle and soft and low.
His hands are slender and white.
But those hands can grasp with a giant's strength,
And the kindly eyes grow cold.
And the voice, so low, and gentle and slow,
In the cause of right grows bold.

Sometimes I've watched those kindly eyes,
Blue as the midday sky.
And the happy light in them would fade,
The joy in them would die.
As some memory sad comes over him,
Like a ghost of by-gone years.
That he cannot still, try as he will,
Nor stay the falling tears.

No honors come to this goodly man,
Though honor is his by right.
He toils all the day in his labor of love,
To win or lose in the fight,
To friend or foe wherever he is called,
He hurries through storm or rain.
To the mean, the low and the pitiful poor.
With never a thought of gain.

So methinks when his work is ended,
And he crosses the Stygian sea.
He will be met by the Great Physician,
Who toiled in Gallilee,
And there his reward will be given him,
And the Master will say, "Well done."
And that vast throng, in a mighty song,
Will sing, "Take the rest thou has won."

210 Taylor Building.

Proceedings of Societies

Medical Examining Board of Virginia.

At the semi-annual meeting of the board held in Richmond, December 13-16, 1921, the following were granted certificates to practice in this State:

Dr. Reuben Allen Barker, New York, N. Y.
Dr. James Truan Campbell, Bristol, Tenn.
Dr. Joseph A. Carney, Salt Petre Cave, Va.
Dr. William B. Carr, Warrenton, Va.
Dr. B. Noland Carter, Baltimore, Md.
Dr. A. L. Christian, Philadelphia, Pa.
Dr. C. O. Foree, Pochontas, Va.
Dr. Ray F. Guynn, Washington, D. C.
Dr. James Humbert, Portsmouth, Va.
Dr. Henry J. Langston, Richmond, Va.
Dr. J. S. Lawrence, Norfolk, Va.

Dr. William K. Lloyd, Norfolk, Va.
 Dr. Basil Makarounis, Fall River, Mass.
 Dr. William Meyer, Enfield, N. C.
 Dr. L. W. Newland, Dante, Va.
 Dr. Paul Robertson, Blackstone, Va.
 Dr. J. A. Shackelford, Martinsville, Va.
 Dr. Ellis Arthur Stephens, Boston, Mass.
 Dr. Gordon S. Stone, Norfolk, Va.
 Dr. Grover C. Sumpter, Hoop, Tenn.
 Dr. L. E. Sutton, Boston, Mass.
 Dr. Henry Gray Turner, Petersburg, Va.
 Dr. James Edwin Wood, Boston, Mass.

Four of these applicants, Drs. Barker, Carter, Lawrence and Wood, were graduates of the University of Virginia and three, Drs. Langston, Meyer and Robertson, of the Medical College of Virginia.

The Tri-State Medical Association of the Carolinas and Virginia

Held its twenty-fourth annual meeting in Norfolk, February 22 and 23, with a large number of the members present and a good time was enjoyed by those who attended. The president, Dr. W. W. Fennell, Rock Hill, S. C., was unable to attend owing to the fact that he was suffering from an attack of influenza and, in his absence, Dr. H. R. Black, the South Carolina vice-president, presided.

High Point, N. C., was selected as the place of meeting for the 1923 meeting. Dr. S. S. Gale, Roanoke, Va., was elected president; Dr. James K. Hall, Richmond, was re-elected secretary-treasurer; and Drs. W. E. Driver, Norfolk, Va., R. B. Epting, Greenwood, S. C., and I. P. Battle, Rocky Mount, N. C., vice-presidents.

New members of the Executive Council are Drs. F. C. Rinker, Norfolk; J. W. Long, Greensboro, N. C., and George H. Bunch, Columbia, S. C. The members who hold over are Drs. J. T. McKinney, Roanoke, Va., Chas. O'H. Laughinghouse, Greenville, N. C., and D. L. Smith, Spartanburg, S. C., for two years; and Drs. W. L. Peple, Richmond, J. P. Matheson, Charlotte, N. C., and Chas. A. Mobley, Orangeburg, S. C., for one year.

Alleghany County Medical Society.

This Society now has a membership of twenty-one and holds meetings the first Friday of each month, alternating the place of meeting between Clifton Forge and Covington. The following are the newly elected officers: President, Dr. B. B. McCutchan, Clifton

Forge; vice-president, Dr. J. A. Riffe, Covington; secretary, Dr. Wm. P. Gilmer, Clifton Forge; treasurer, Dr. W. M. Revercomb, Clifton Forge.

Pittsylvania County Medical Society.

Dr. C. L. Bailey, Danville, Va., has been elected president and Dr. J. J. Neal, also of Danville, secretary of the Pittsylvania County, Va., Medical Society.

The Truth About Medicine

During January the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-Official Remedies: The Abbott Laboratories:

Butyn
 G. W. Carnrick Co.:
 Solution Post-Pituitary
 Parke, Davis and Co.:
 Pituitrin "O"

Book Announcements

Consumption Cures, Cough Remedies, etc. 124 pages. Pamphlet form. Price 30 cents.

Alcohol, Tobacco and Drug Habit Cures. 31 pages. Pamphlet form. Price, 15 cents. Prepared and issued by the PROPAGANDA DEPARTMENT of the Journal of the American Medical Association. Chicago. 1922.

Abdominal Pain. By PROF. DR. NORBERT ORTNER, Chief of the Second Medical Clinic at University of Vienna. Authorized translation by WILLIAM A. BRAMS, M. D., Formerly Lieutenant Commander, Medical Corps, U. S. N., and DR. ALFRED P. LUGER, First Assistant, Second Medical Clinic, University of Vienna. New York. 362 pages. Cloth. \$5, C. O. D. or cash with order.

Lethargic Encephalitis,

Or "sleeping sickness," was given as the cause of 1,505 deaths in the death registration area of the United States in 1920. Deaths from this cause were reported in every state in the registration area except Delaware; the largest number of deaths from this disease was reported from New York. There were 1,453 deaths among the white population, as compared with only 52 among the colored. The number of males and females was nearly the same. More of these deaths occurred between 20 and 29 years of age, though no age group escaped entirely.

Virginia Medical Monthly

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ALEX. G. BROWN, Jr., M. D.,
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Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS,
Editor's Assistant and Assistant Manager.

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Editorial

Sunshine and Cod Liver Oil in Rickets.

Sunshine and cod liver oil as a cure of rickets has been experimentally pointed out by a series of studies by Power and Park Shiply and others.*

Considerable noteworthy study has been given rickets within the last year and the publications on this subject must not fail to arouse interest in the minds of the pediatricist and the internist. In fact, the experiments, while applied to rickets, extend far beyond this disease. Cod liver oil contains and sunlight embodies something which is essential for opti-cellular function, say these authors. "Light, like air, is absorbed and in some way influences cellular function." The pigmentation of the negro baby excluding the light, as well as their poor food supply, may explain the frequent occurrence of rickets in colored children. While one group of students leans to the dietary factor in cod liver oil as a curative agent in rickets, another group champions the opinion that sun light is equally necessary.

The summary of the experiments is as follows:

1. The object of the experiment was to determine whether or not sunlight prevents the development of rickets in rats.

2. A diet was employed which at room light regularly gives rise to a disease in its essential features identical with rickets as seen in

human beings. The diet was high in calcium, low in phosphorus, and was insufficiently supplied with fat soluble A. In other respects it was well constituted.

3. Eighteen rats were placed on the diet. Twelve were exposed to sunlight for a total of 242 hours over a period of sixty-two days. Six were kept under conditions of ordinary room light as control animals.

4. The control rats, killed with ether at the end of sixty days, all showed rickets.

5. The rats exposed to sunlight, killed coincidentally, remained without exception entirely free of rickets. The absence of the lesions of rickets was confirmed by histologic examination.

6. The beneficial effects of the sun's rays were not limited to the skeleton, since the condition of the animals underwent a general improvement under the influence of the treatment with sunlight. The effect of the sunlight on the skeleton was a manifestation of its favorable effect on a single tissue.

7. The exposure to the sun's rays, however, did not entirely compensate for the defect of the diet. The animals remained undersized: the bones, though completely calcified, remained thin. Though the sunlight did not alter the defects in the diet, it permitted the animals to thrive to a limited extent in the presence of them.

8. It is necessary to conclude, therefore, that sunlight in some way raises the efficiency of the body cells. It enables the organism to put into operation regulatory mechanism which otherwise would have been inoperative or ineffectual.

9. The effect of sunlight and of cod liver oil on the growth and calcification of the skeleton and on the animal as a whole seems to be similar, if not identical.

Arsenic.

Arsenic has played a unique role in human affairs. The poison and criminal use of it in earlier times is a chapter filled with suicide and crime; owing to its tastelessness and freedom of odor, it was employed as a favorite agent in the gruesome art of "slow poisoning." In fact and fiction, by one member of the family for the purpose of slow poisoning another member, it has been employed. Acute poisoning, however, is so signalized by violent symptoms that its detection is more or less

*J. A. M. A., Jan., 21, 1922, p. 1593.

easily recognized. On this account, its criminal use, for quick results, has been less. The slow elimination of arsenic from the body, when taken in minute amounts over a long period of time, makes its use in the manufacture of fabrics and food preservatives a serious consideration. For instance, in the case of a manufacturer of candy who used six parts of arsenic to a million parts of candy, in the color scheme, it was thought to be deleterious and harmful. On the other hand a striking tolerance may be cited for arsenic in the case of the Tyrol-arsenic-eaters.

It is not of the use of arsenic in the arts and foods, but of its employment as a medicinal agent that our interest in this drug is greatest. It has been shown that the administration of arsenic in small doses to young animals tends to increase the growth; the bones appear to be larger and thicker than those of controls; these observations were substantiated by some observers.

SALVARSAÑ.

Ehrlich's study of the action of organic compounds of arsenic in syphilis was an epochal event in medicine. The evolution of "606" was accomplished in an investigation conducted for the purpose of securing a trypanocidal drug, free from toxic action to the patient. At first, its specific action was thought to be immediate and complete; one dose was deemed sufficient; a single injection appeared to produce dramatic healing effects in certain phases of syphilis. It was extolled; it was declared capable of producing a complete cure. Salvarsan, however, through the years of its use, has established itself in the armamentarium as a drug of definite value; in properly repeated administration, and combined with mercury, it has proved effective in syphilis.

FOWLER'S SOLUTION.

"Towards the end of the 18th century a secret patent specific against ague was popular in Berlin, and these 'tasteless ague and fever drops' came in vogue in this country and England and were occasionally used from 1786 to 1783 at the General Infirmary of the county of Stafford, where Fowler was physician and a Mr. Hughes, the apothecary. In October, 1783, Hughes told Fowler that he had found that the active constituent of this secret remedy was arsenic, and that he had made a solution of arsenic to take its place: this substitute was

tested and compared with regard to its effect on patients. Fowler published a pamphlet of 123 pages: *Medical Reports of the Effects of Arsenic in the Cure of Ague, Remitting Fever, and Periodic Headaches*. Fowler gave full credit to Hughes for his investigations.

"Fowler was born in 1736 at York where from 1760 to 1774 he kept a chemist's shop; he then went to Edinburgh and took his M. D. degree and settled down to practice in Stafford." (*The British Medical Journal*, January 21, 1922.)*

Solution of potassium arsenite (U. S. P.) is known as Fowler's Solution. It contains one per cent of arsenic trioxid. It has a characteristic odor and taste from the addition of compound tincture of lavender.

*Pharmacology of Useful Drugs, A. M. A. page 335.

Surface Pain in Cardiac Disease.

Tension in the auricles may produce pain on the surface over the areas supplied by sixth and seventh thoracic and adjacent segment; while disease of the aorta and ventricles may produce pain higher up the chest in the areas of the third and fourth cervical nerves. Head's* explanation of this remarkable phenomenon is found in the embryological development of the heart. He says: "Evidently its apparent visceral innervation is upside down in relation to the present position of the adult organ. At one stage of its development, the heart consisted of a single tubular vessel, the hinder end of which was continuous with the great veins, which the anterior end bifurcated into two primitive aortae. At this time the heart lay in the middle line and clearly showed a division into three chambers; the hindermost of those becomes the auricle, the middle portion the ventricle, the most headward the bulbous aortae and alternately the ascending arch of the aorta. This tube then becomes bent upon itself so that the hindermost or auricle portion comes in the adult to lie higher than the middle or ventricular portion. Apparent impulses from the heart enter segments of the central nervous system, just as if the auricles were still the hindmost portion of the heart and as if it was a median organ. Moreover, the segments affected jump from the fourth cervical to the 6th and second thoracic, omitting the upper limb which has

*Certain Aspects of Pain. H. Head: *British Medical Journal* Jan. 7th, 1922, page 4.

budded out at a later stage of development." Severe mitral stenosis which is characterized by an abnormal intra-auricular pressure, shows frequently surface pain or tenderness over areas of the distribution of sixth and seventh thoracic nerves. This comes about through the abnormal tension and pressure within the auricles which excites segments of the spinal cord to painful impulses.

News Notes

Leprosy in the United States

Surgeon General Cumming, of the U. S. Public Health Service, states that leprosy, though comparatively rare in continental United States, is still a public health problem of much greater seriousness than seems to be popularly supposed. Its virulence waxes and wanes in accordance with laws that we do not understand; and our present comparative immunity does not lessen the necessity for being on guard.

In 1786 leprous beggars were so common in New Orleans that they had to be segregated in a leprosarium. In 1864 three per cent. of the population of the Hawaiian Islands were lepers. In 1890 California had to establish a leprosarium, and Louisiana and finally, Massachusetts followed suit. According to the best estimate obtainable, there are now from 500 to 1,500 lepers in this country, a number of whom are known to have acquired the disease in the Philippines. Foci of the disease exist in the United States on the Pacific coast, in the Northwest, in the Gulf States, and along the Atlantic seaboard.

It was not until 1889 that the U. S. Government took its first steps to prevent lepers from coming to this country; and the preventive laws are now sufficiently explicit. Nevertheless, the long period during which the disease incubates before declaring itself makes it very difficult to shut out all potential lepers. To meet this difficulty the law provides that, for three years after admission, any alien leper may be deported if the cause of the disease existed before he came to the United States.

In February, 1917, Congress provided for a national home for lepers to be administered by the Public Health Service; but so strongly did the various States object to the founding

of such an asylum within their borders that it was not until four years later that the Service was able to carry out the provisions of the act by acquiring the State leper home in Louisiana. Part of this home has been remodeled; and work on the remaining necessary alterations and additions is proceeding.

A mode of treatment involving the use of chaulmoogra oil, which for 200 years has been reputed to be beneficial for leprosy, now holds out a ray of hope to lepers. The oil itself is absorbed slowly and is apt to cause painful abscesses; but the hypodermic injection of its ethyl esters, devised by Dean, has supplied a way by which it may be used without undue suffering. Since 1912 a total of 183 patients have been paroled from the Kalihi Investigating Station of the Public Health Service in Hawaii as being apparently cured. Of those who have received the chaulmoogra oil derivatives only twelve (eight per cent.) have returned for further treatment. While it is too early to say that specific cure for the disease has been found, it is certain that the ethyl esters constitute a most valuable agent in the treatment of leprosy, especially for young persons and those in the early stages of the disease; in older persons and advanced cases the indications are less promising.

The Virginia Society of Oto-Laryngology and Ophthalmology.

Will hold its second annual spring meeting in Roanoke, April 13. Though young, this Society is in a flourishing condition and has a membership of over half of the Virginia physicians in these specialties. A large number of the members are planning to attend. Dr. Harry Stone, Roanoke, is chairman of the local committee of arrangements and the visitors are assured of a good time. This Society meets twice a year—in the various cities of the State in the spring and at the time and place of meeting of the Medical Society of Virginia in the fall.

The subject for general discussion at this meeting is Corneal Ulcer, and this will be handled by Drs. Morrison, of Lynchburg, Hedges, of Charlottesville, and Hill, of Richmond. Several distinguished men from a distance have been invited and some have accepted and promised to take part in the program. Titles of several papers are already in hand.

Present officers of this Society are Dr. Wil-

liam F. Mercer, Richmond, president; Dr. E. G. Gill, Roanoke, vice-president; Dr. J. R. Gorman, Lynchburg, secretary-treasurer, and Drs. John Dunn, Richmond; James Morrison, Lynchburg, and R. F. Compton, Charlottesville, members of executive council.

The International Society of Medical Hydrology

Has recently been formed in London, with a preliminary membership of seventy-one medical men representing thirteen countries. A representative in each country was appointed, the aim being to establish an international journal to contain the clinical and experimental work of each country, bearing on the medical action and uses of baths. Dr. R. Fortescue Fox, of London, was elected president. Dr. Guy Hinsdale, of Hot Springs, Virginia, was appointed representative for the United States of America.

Medical hydrology, or hydrotherapy as we are accustomed to call it in America, has not been very well co-ordinated and given the prominence it deserves in medical practice. The late Dr. Simon Baruch more than anyone else in America was the ardent advocate of hydrotherapy and was an accomplished teacher of the subject in Columbia University, New York. It is hoped that the teaching of this important branch of therapeutics will be resumed and not allowed to fall into neglect. It must be confessed that very little attention is given to this subject in medical schools.

Dr. Hinsdale would be glad to hear from physicians interested in this subject.

Married.

Dr. Zebulon Vance Sherrill and Dr. Carolyn A. Clark, both of Marion, Va., February 9.

Dr. William Marco Sheppe, University, Va., and Miss Olive Bow Harris, of Albemarle County, Virginia, February 22. Dr. Sheppe is a graduate of the University of Virginia, in the class of 1921, at which time he was appointed assistant pathologist in the Medical School there.

Dr. John Henderson and Mrs. Martha Spencer Warburton, both of Williamsburg, Va., February 28.

Dr. John M. T. Finney, Jr., Baltimore, Md., and Miss Virginia Lee Milton, Wilmington, N. C., February 4.

Dr. William A. Lucas, Pulaski, Va., and Miss Mary Trent, Knoxville, Tenn., March 1.

Laboratory Workers Contract Tularaemia.

All six of the laboratory workers of the U. S. Public Health Service who have been studying tularaemia, a disabling sickness of man which has been known, particularly in Utah, for the last five years, have contracted the disease, two of them being infected in the laboratory in Utah and the other four in the Hygienic Laboratory in Washington. Such a record of morbidity among investigators of a disease is probably unique in the history of experimental medicine. In these workers the disease began with a high fever, lasting about three weeks, and was followed by two months of convalescence. The disease has few fatalities, its chief interest arising from the long period of illness which it causes in mid-summer, when the farmers of Utah are busily engaged in cutting alfalfa and plowing sugar beets.

The studies into the cause and transmission of the disease show it to be due to a germ, which is conveyed by the blood-sucking fly, the stable fly, the bedbug, the squirrel flea, the rabbit louse or the mouse louse. Only the first four of these are known to bite man. It appears possible that the germ may also enter through unbroken skin, for instance, that of the hands.

Dr. William B. Hopkins,

Of this city, was elected grand senior master of the National Omega Upsilon Phi Fraternity, at the grand convention in Richmond, February 25.

Dr. R. L. Kern,

Of this city, has been named senior warden of the Libertas Lodge of Perfection, No. 5, Ancient and Accepted Scottish Rite of Freemasonry, for the ensuing year.

Dr. Thomas J. Tuder,

Until recently of Keokee, Va., has located at Exeter, Va.

The American Pediatric Society

Will hold its thirty-fourth annual meeting at Wardman Park Hotel, Washington, D. C., May 1, 2 and 3. Dr. Maynard Ladd, of Boston, is president, and Dr. Howard Childs Carpenter, of Philadelphia, secretary.

Dr. James Rawlings,

Staunton, Va., has been named a State clinician with the State Board of Health. He will

travel throughout the State, establishing temporary clinics in rural communities for correction of defects in the eye, ear, nose and throat, working especially among school children. His headquarters will be in Richmond.

Dr. I. S. Stone,

Washington, D. C., was recently the guest of friends at Purcellville, Va.

Dr. and Mrs. Charles E. Dyer

Have returned to their home in Pulaski, Va., after a short visit to Nashville, Tenn.

Dr. D. N. Twyman,

Appomattox, Va., left early in February for a stay of several weeks in Florida.

Rockefeller Gift to School of Public Health.

The Rockefeller Foundation has announced a gift of \$6,000,000 to the Johns Hopkins University, of Baltimore, for the endowment and building of the school of hygiene and public health. This school, which aims at prevention rather than cure of disease, has been supported by the Foundation from year to year since its opening in 1918. The \$6,000,000 gift, however, places it on a permanent footing and provides for the construction of new buildings on a site adjacent to the Johns Hopkins Medical School and Hospital.

Radium Deposits in Belgian Congo.

Prof. Scoupe, geologist of the University of Ghent, has returned from the Belgian Congo and announces that he has located two radium deposits, said to be the richest in the world. A Belgian souvenir hunter secured some strange looking stones and brought them back. The examination developing powerful radioactivity was the fact which led to Prof. Scoupe's trip of investigation.

Dr. Beverley R. Tucker,

Richmond, Va., was elected vice-president of the Westmoreland Club, this city, at its annual meeting in February.

Doctors on C. of C. Committees, Richmond.

Drs. J. Shelton Horsley, Garnett Nelson and William H. Parker have been appointed members of the Committee on Health and Sanitation of the Richmond Chamber of Commerce for this year, and Dr. Charles R. Robins a member of the Advisory Council.

Doctors Among Masonic Officers.

At the annual convocation of the Grand

Lodge of Virginia, A. F. and A. M., Dr. E. A. Drum, Richmond, was elected a member of the Board of Governors of the Masonic Home for a period of three years. The following doctors were among those elected deputy grand masters: Drs. G. F. Simpson, Purcellville; C. F. Rinker, Upperville; W. D. Prince, Stony Creek; and J. L. Early, Saltville. Drs. C. D. Barksdale, Halifax, R. L. Page, Batesville, and A. M. Showalter, Cambria, were among those elected lecturers.

Dr. James C. Braswell,

Formerly with the Mayo Clinic, has located in Tulsa, Okla., where he is limiting his practice to eye, ear, nose and throat work and oral and plastic surgery. Dr. Braswell graduated from the Medical College of Virginia, Richmond, in 1915, after which he served an internship at Johnston-Willis Sanatorium, this city.

Officers in McGuire Unit.

The annual meeting of the McGuire Unit, designated as Base Hospital No. 45, was held on February 28, at which time a banquet was held and short talks given by several of the members. Dr. Carrington Williams, Richmond, was elected vice-commander, and Drs. Fred M. Hodges and Greer Baughman, also of Richmond, were among those named members of the staff.

Lower Death Rates in Every Period of Life.

The Department of Commerce, through the Bureau of the Census, has issued a statement which shows that in every age group the death rate was lower in 1920 than in 1910, the most pronounced change appearing in the rate for infants under one year of age, in which there was a decline of about twenty-six per cent. The death rate for old people above 75 years of age shows a decrease of about 6 per cent.

Particularly noteworthy is the decrease of 12 per cent. in the age group 45 to 74, due largely to much lower rates from tuberculosis, acute nephritis and Bright's disease, organic diseases of the heart, accidents, and typhoid fever. On the other hand, increases in the rate from influenza, cancer, and puerperal causes clearly show some of the danger spots.

Dr. Giles B. Cook

Has been elected president of a Dramatic Club recently organized in Front Royal, Va.

Dr. R. E. Booker,

Lottsburg, Va., left the latter part of February for a visit to Florida.

Dr. A. F. Bagby,

Of this city, paid a short visit to West Point, Va., recently.

Coroner of Norfolk.

Dr. C. D. J. MacDonald has been appointed city coroner of Norfolk, Va., to fill the vacancy caused by the death of Dr. J. Judd Miller.

Dr. R. Lloyd Williams also continues as city coroner, which office he has held since the provision was made for two full-fledged coroners for the city of Norfolk.

N. C. Hospital Association.

At the annual meeting of the Association, recently held at High Point, N. C., Dr. John A. Williams, Greensboro, was elected president, and Dr. John W. Long, Greensboro, secretary-treasurer.

Dr. Dean B. Cole

Has tendered his resignation as head of the Tuberculosis Department of the Richmond Health Bureau, with which he has been connected for more than a year. After spending some time at his former home at Chilhowie, Va., he expects to go to Saranac, N. Y.

U. S. Life Tables.

Official life tables, shortly to be issued compiled from figures derived from births, deaths and populations in this country, show that mortality at practically all ages is higher among men than among women. The rural classes, regardless of sex, enjoy a much lower mortality than those living in the cities. In 1901, the expectation of life among white females at birth was about three years more than among white males, and in 1910, the excess in favor of the females had increased to about three and one-half years.

Dr. Hubert Work,

President of the American Medical Association and first assistant postmaster-general, will succeed Mr. Hays as postmaster-general of the United States.

Dr. Robert T. Ferguson,

Until recently of Gaffney, S. C., has moved to Charlotte, N. C., where he will limit his practice to gynecology and obstetrics. He is

an alumnus of the former University College of Medicine of Richmond.

Dr. Smith Ely Jelliffe,

Of New York City, has been elected president of the New York Psychiatric Society.

New York's 1921 Death Rate Its Lowest.

The death rate of New York State for 1921 is the lowest yet recorded in that State, being only 12.2 per 1,000 of the population. New York City, with a rate of 11.2, still retains its lead over the remainder of New York State. While modern standards of public health administration have contributed in large measure to this improvement, there is no doubt but that much is due to improvement in living conditions and the general advance in education and intelligence.

Louisiana Health Almanac.

The Louisiana State Board of Health has this year issued its Health Almanac. It is attractive in appearance, replete with information for the layman tending to the promotion of good health, and is breezy enough with jokes to be a good tonic.

The Journal of Metabolic Research

Made its initial appearance in January and is worthy of a prominent place among the medical journals of this country. It "is intended to serve for publication of the results of original research," and is to be published monthly by the Physiatrie Institute of Morristown, N. J., at the price of \$10 a year. The copy in question contains 163 pages in addition to a number of illustrations. Dr. Frederick M. Allen is editor and will be assisted by a number of collaborators.

Close of Volume.

With this issue appears our annual index, March completing our forty-eighth year of consecutive publication. After running for nearly forty-six years as a privately owned Journal, the VIRGINIA MEDICAL MONTHLY was, in November, 1919, purchased by the Medical Society of Virginia, to be used as its official organ.

We aim to maintain a high standard in our reading as well as our advertising pages and solicit the help of our readers. Secretaries of the various component societies of the Medical Society of Virginia are urged to keep us advised as to the activities of their societies

and to send us notes from them; each doctor is asked to let us have personals and, so far as possible, patronize those who have favored us with their advertisements.

Let's all pull together to make our next volume the best ever.

Governor Trinkle Advocates Public Health Measures.

In connection with the big work being done by our State Health Department, the remarks by Governor Trinkle, in his inaugural address, February 1, are so pertinent, that we reproduce those on "Health," in the Miscellaneous Department of this issue of the JOURNAL. We trust that many good health measures may be passed during his administration.

The American Congress on Internal Medicine

Is to hold its annual session at Rochester, Minn., April 3-8, under the presidency of Dr. Sydney R. Miller of Baltimore.

Course in Radiology Given at Canadian School.

The University of Toronto is now giving a graduate course in radiology. Candidates are required to be graduates in medicine of this or some university recognized for this purpose by the senate. They must also have to their credit, one year's internship, after graduation, in a recognized hospital. The course is to extend over one winter session of eight months.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for reconstruction assistant in (a) physiotherapy and (b) occupational therapy; and for reconstruction aid. Applications will be rated as received until further notice. Both men and women may enter this examination. Further information may be received of above named commission.

For Sale.

Doctor's home and practice in a fast growing suburb, 3½ miles from Richmond, on electric car line. Modern 12-room, fireproof, brick building, with hard wood floors and all city conveniences—hot and cold water, bath, electricity, etc. Large lawn with shade trees and shrubs. All necessary out-buildings. Centrally located. Two city blocks from high school (15 teachers), Masonic and Odd Fellows temples, four churches. Population about 3,500; one other physician. Practice established twelve years. Reason for leaving

now located in Professional Building, Richmond. Collections have averaged \$5,00 a year. Possession in any reasonable time and will introduce successor. Price \$15,000 with reasonable terms. Property could not be replaced for \$25,000. Address "S. M.", care this journal. (Adv.)

Physician Wanted.

To take charge of fine country practice in best agricultural section of Bedford county. New seven room house available with running water, bath room, etc. Garage, barn and twelve acres good land. Splendid garden and fruit. Vacancy occasioned by recent death of physician in charge. Address Mrs. W. R. Arnold, Route 7, Bedford, Va. (Adv.)

Location with Small Acreage for Doctor or any One Wanting Farm with Small Acreage.

This property is in the western part of the State in a village of about 150 to 200 inhabitants, and on a railroad. The practice is practically unopposed. The property consists of an eight room house in good condition, well under shelter; an office, barn for six horses, garage, corn crib, and other out-building on 30-acre tract with about 70 fruit trees beginning to bear. It is within half a mile of two churches, store block, smith shop, Masonic hall, school (2 rooms) in front of house, and garage across the road. Can be bought for \$5,500 on the right kind of terms. Write "T. A. G.", care this JOURNAL. (Adv.)

Obituary

Dr. Edmund Lee Tompkins

Died suddenly at his home at Fine Creek Mills, Va., February 7, 1922. He was born in Richmond, November 18, 1862. His early schooling was at McGuire's School, from which place he entered the academic school of the University of Virginia. Later, he studied medicine at the University, taking his diploma in 1885, following which he went to Post Graduate Hospital, New York City. After this, he located in Washington where he was connected with the Emergency Hospital and the staffs of Columbia and George Washington Universities. In 1895, he married Miss Sadie Corbell, Cotten of Nanssion county, Va., by whom he is survived.

In 1902, Dr. Tompkins moved to Powhatan County, where he had since made his home. In addition to his professional work, he was active in church affairs, and was identified with many of the county's interests, becoming a member of the County Board of Health, coroner, and later was one of the Board of Supervisors and, during the World War, served as an examiner in the Selective Draft Service. Dr. Tompkins was president of the Powhatan County Medical Society and had been for a number of years a member of the Medical Society of Virginia.

Dr. Wyatt Reid Arnold,

Of Bedford County, Va., died at a Roanoke Hospital, January 21, 1922, after having been in bad health for about a year and half. He had been for a number of years a member of the Medical Society of Virginia. Dr. Arnold was born in Campbell County, Va., fifty-six years ago. He graduated from the College of Physicians and Surgeons, Baltimore, in 1886, and from the Medical College of Virginia in 1887. After this he practiced in Campbell County until 1910, when he moved to Bedford County. Here he practiced until he was forced by ill health to retire in the fall of 1920. Dr. Arnold was twice married and is survived by his second wife, who was Miss Pattie Steptoe of Boonsboro, and by several sisters.

Dr. Andrew Caswell Fisher

Died at his home at Emmerton, Va., February 7, after a brief illness with pneumonia. He is survived by his wife, several children and a large family connection. Dr. Fisher spent much of his early life in Richmond and studied medicine at the Medical College of Virginia, from which he graduated in 1885. He was active in the health work of Richmond County and in his professional work up to the time of his last illness, in spite of his age, 71 years. He was a prominent member of the Northern Neck Medical Society and was also a member of the Medical Society of Virginia.

Dr. J. Judd Miller,

Councilor of the Medical Society of Virginia from the Second District, died at his home in Norfolk, Va., February 20. He was born in Madison County, Virginia, in 1872. Upon completion of his academic education, he studied medicine at Medical College of Virginia, Richmond, from which he received his

diploma in 1898. He was city coroner of Norfolk and active in the professional interests of that section. Dr. Miller is survived by his wife, father and three brothers.

Dr. Reuben Thomas Ramsey

A graduate of Georgetown University Medical School in 1897, and for a number of years a practitioner at Healing Springs, Va., died at his home, February 17, from pleurisy and empyema. He was fifty-four years of age. His wife survives him.

Dr. Thomas had an extensive practice in Bath and Alleghany Counties and was characterized by great unselfishness and devotion to his patients. He was of sturdy frame and, until he contracted his last illness by exposure attendant upon his profession, had been apparently in the best of health.

Dr. Reuben Thomas Ramsey

Died at his home at Gretna, Va., March 1, after an illness of two years. He was born at Toshes, Va., sixty-five years ago but had lived at Gretna for the past twenty years. He graduated in medicine from the College of Physicians and Surgeons of Baltimore, in 1879. Dr. Ramsey was one of the most widely known physicians of Pittsylvania County, a prominent Mason and was also active in the politics of the county.

Dr. Ernest Gustavus Zinke,

Of Cincinnati, a prominent obstetrician and gynecologist, died suddenly at Palm Beach, Fla., January 30. He was born in Prussia and was seventy-six years of age. He was actively identified with medical interests of Ohio and was affiliated with a number of local and national societies. He was an ex-president and for ten years secretary of the American Association of Obstetricians and Gynecologists.

Dr. Alexander Reynolds,

Of Graham, Va., died January 21, at the age of 91 years. He was a graduate of the Medical College of Virginia in 1855 and was a veteran of the Civil War.

Dr. James Woods Babcock,

For twenty-five years superintendent of the State Hospital for Insane at Columbia, S. C., and since 1913, surgeon in charge of Waverley Sanitarium, of that city, died at his home on March 3. He was sixty-six years of age and a graduate from the Medical School of Harvard University, Boston, in 1886.

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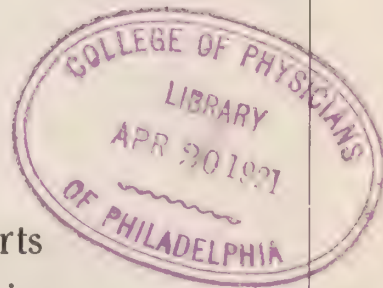
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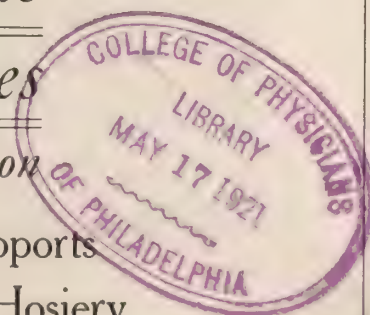
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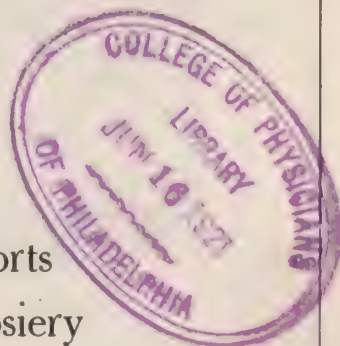
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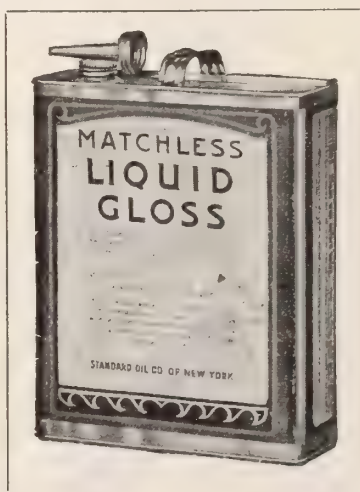
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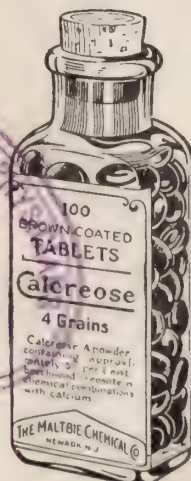
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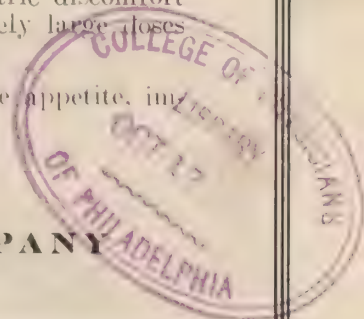
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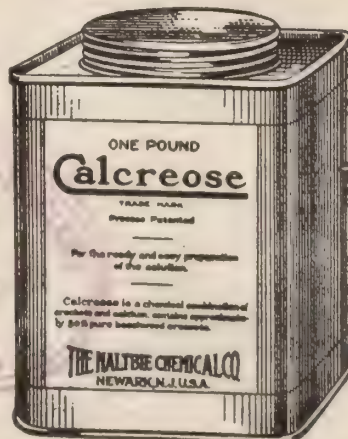
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